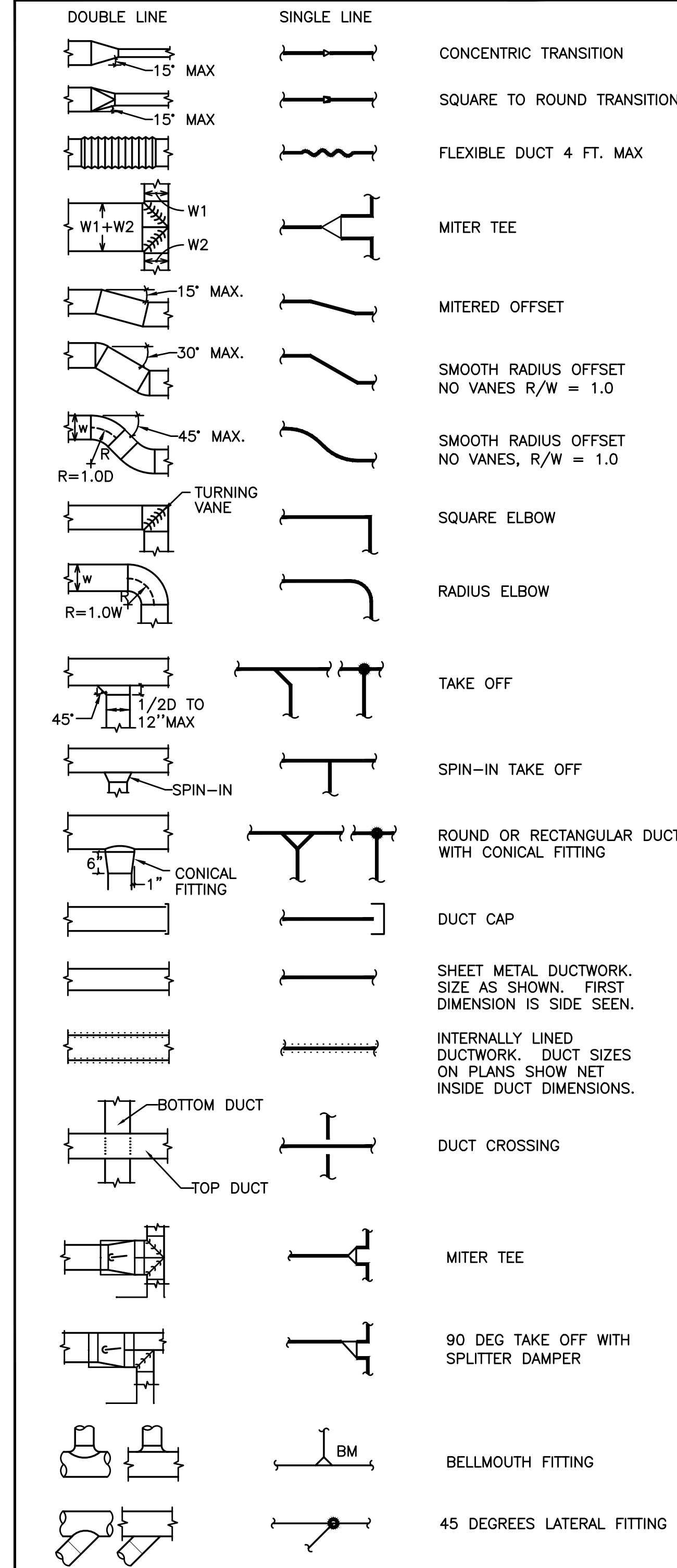


MECHANICAL LEGEND

	SUPPLY AIR DIFFUSER	AFF	ABOVE FINISH FLOOR
	RETURN AIR DIFFUSER	AHU	AIR HANDLING UNIT
	EXHAUST AIR DIFFUSER	B.D.	BOTTOM OF DUCT
	DIRECTIONAL AIR FLOW	BHP	BRAKE HORSEPOWER
	MANUAL VOLUME DAMPER	BOG	BOTTOM OF GRILLE
	SUPPLY/OUTSIDE AIR DUCT UP & DOWN	BTU	BRITISH THERMAL UNITS
	RETURN AIR DUCT UP & DOWN	CFM	CUBIC FEET PER MINUTE
	EXHAUST AIR DUCT UP & DOWN	CONN.	CONNECTION
	DEMOLISH	CONT.	CONTINUATION
	EXISTING	CW	DOMESTIC COLD WATER
	CONNECT TO EXISTING	DB	DRY BULB
	THERMOSTAT	DIA.	DIAMETER
	TEMPERATURE SENSOR	DIST.	DISTRIBUTION
	NOTE	EXH	EXHAUST AIR
	EQUIPMENT DESIGNATOR	EDB	ENTERING DRY BULB TEMPERATURE
	GATE VALVE/SHUT-OFF VALVE SEE SPECS	EWB	ENTERING WET BULB TEMPERATURE
	CHECK VALVE	EWT	ENTERING WATER TEMPERATURE
	BALANCING VALVE	FF	FINISH FLOOR
	FLOW CONTROL/LIMITING VALVE	FIXT.	FIXTURE
	THERMOMETER	F.O.B.	FLAT ON BOTTOM
	DIRECTION OF FLOW	FPM	FEET PER MINUTE
	PUMP	FPS	FEET PER SECOND
	STRAINER W/DRAIN VALVE	FT.	FEET / FOOT
	PRESSURE GAUGE	GA.	GAUGE
	PETE'S PLUG	GEXH	GREASE EXHAUST AIR DUCT
	DOUBLE CHECK ASSEMBLY	GPM	GALLONS PER MINUTE
	PRESSURE REDUCING VALVE	H	HEIGHT
	UNION	HP	HORSEPOWER
	2-WAY CONTROL VALVE	I.D.	INSIDE DIAMETER
	3-WAY CONTROL VALVE	IN.	INCHES
	TRIPLE DUTY VALVE	L	LENGTH
	CAP	LBS.	POUNDS
	MOTORIZED DAMPER	LDB	LEAVING DRY BULB
	BALL/SHUT-OFF VALVE(SEE SPECS)	LWB	LEAVING WET BULB
	FIRE DAMPER	LWT	LEAVING WATER TEMPERATURE
	FIRE / SMOKE DAMPER	MA	MAKE UP AIR
	SMOKE DAMPER	MAX.	MAXIMUM
	FAN MOTOR	MBH	THOUSANDS OF BTUs PER HOUR
	EQUIPMENT MAINTENANCE CLEARANCE AND ACCESS	MD	MOTORIZED DAMPER
	(E) EXISTING	MIN.	MINIMUM
	(D) DEMOLISH	MVD	MANUAL VOLUME DAMPER
	NEW WORK	NC	NOISE CRITERIA
	(G) NATURAL GAS	N.C.	NORMALLY CLOSED
	(CD) CONDENSATE DRAIN	N.I.M.	NOT IN MECHANICAL
	(RF) TWO OR THREE REFRIGERANT LINES	NO.	NUMBER
	(HWS) HEATING WATER SUPPLY	N.O.	NORMALLY OPEN
	(HWR) HEATING WATER RETURN	O.A.	OUTSIDE AIR
	(CHWS) CHILLED WATER SUPPLY	P	PERSON
	(CHWR) CHILLED WATER RETURN	PSI	POUNDS PER SQUARE INCH
	MANUAL VOLUME DAMPER	P/T	PRESSURE / TEMPERATURE
	MANUAL VOLUME DAMPER	R.A.	RETURN AIR
	MANUAL VOLUME DAMPER	RECT.	RECTANGULAR
	MANUAL VOLUME DAMPER	REQ'D	REQUIRED
	MANUAL VOLUME DAMPER	S.A.	SUPPLY AIR
	MANUAL VOLUME DAMPER	S.P.	STATIC PRESSURE
	MANUAL VOLUME DAMPER	SQ.	SQUARE
	MANUAL VOLUME DAMPER	TEMP.	TEMPERATURE
	MANUAL VOLUME DAMPER	TYP.	TYPICAL
	MANUAL VOLUME DAMPER	VAV	VARIABLE AIR VOLUME
	MANUAL VOLUME DAMPER	W	WIDTH
	MANUAL VOLUME DAMPER	WB	WET BULB
	MANUAL VOLUME DAMPER	WPD	WATER PRESSURE DROP
	MANUAL VOLUME DAMPER	Ø	DIAMETER

AIR DISTRIBUTION DETAILS



FIRE PENETRATION REQUIREMENTS FOR DUCTS:

2019 OMSC (OREGON MECHANICAL SPECIALTY CODE) & 2019 OSSC (OREGON STRUCTURAL SPECIALTY CODE)

CODE SECTIONS –SPECIFIC REQUIREMENTS, EXCEPTIONS AND DESIGN APPROACH REQUIREMENTS.

SECTION 607.6 – HORIZONTAL ASSEMBLIES
 PENETRATIONS BY DUCTS OF A FLOOR/CEILING OR ROOF/CEILING ASSEMBLY SHALL BE PROTECTED BY A SHAFT ENCLOSURE THAT COMPLIES WITH SECTIONS 713, 717.6.1 THROUGH 717.6.3 (OSSC) (SEE BELOW FOR VERTICAL ASSEMBLIES/SHAFT PENETRATIONS OR VERTICAL FIRE PARTITIONS – THIS WILL APPLY TO ALL DUCTS THAT ARE ROUTED UP IN A RATED SHAFT).
 OR
 SECTIONS 607.6.1 THROUGH 607.6.3 THROUGH PENETRATIONS OF NOT MORE THAN TWO FLOORS TO BE PROTECTED WITH EITHER LISTED FIRE DAMPER OR A THROUGH PENETRATION PER SECTION 714.5
 EXCEPTIONS: DUCTS PERMITTED TO PENETRATE THREE FLOORS OR LESS IF ALL 5 EXCEPTIONS ARE MET UNDER SECTION 607.6.1.

SECTION 607.5.5 SHAFT ENCLOSURES – PENETRATIONS ARE PERMITTED BY DUCTS WITH A LISTED FIRE AND SMOKE DAMPER OR
 EXCEPTIONS: (THE FOLLOWING EXCEPTIONS ARE USED IN PART OR IN WHOLE ON THIS PROJECT)
 1. FIRE DAMPERS ARE NOT REQUIRED FOR ANY OF THE FOLLOWING
 1.1 STEEL EXHAUST SUBDUCTS ARE EXTENDED NOT LESS THAN 22 INCHES ON A SUBDUCT SYSTEM WITH CONTINUOUS FLOW
 1.2 PENETRATIONS ARE TESTED IN ACCORDANCE WITH ASTM E119 OR UL263 (SEE ATTACHED CUT SHEETS ON UL PENETRATION DETAILS)
 2. GROUP R OCCUPANCIES USING A SUB DUCT SYSTEM AS NOTED ABOVE.
 3. SMOKE DAMPERS ARE NOT REQUIRED AT PENETRATIONS OF EXHAUST SHAFTS IN PARKING GARAGES WHEN SHAFTS ARE SEPARATED FROM OTHER SHAFTS BY NOT LESS THAN A 2 HOUR RATING.
 4. FIRE OR FIRE SMOKE DAMPERS ARE NOT REQUIRED IN KITCHEN OR CLOTHES DRYER EXHAUST SYSTEMS.

OSSC SECTION 713.8 PENETRATIONS.
 PENETRATIONS IN A SHAFT ENCLOSURE SHALL BE PROTECTED IN ACCORDANCE WITH SECTION 714 AS REQUIRED FOR FIRE BARRIERS.

SECTION 714.2 A LISTED PENETRATION FIRESTOP SYSTEM SHALL BE INSTALLED.

SECTION 714.4.1 THROUGH PENETRATIONS
 EXCEPTIONS #2
 THE MATERIAL USED TO FILL THE ANNULAR SPACE SHALL PREVENT THE PASSAGE OF FLAME AND HOT GASSES SUFFICIENT TO INGITE COTTON WASTE WHEN SUBJECTED TO ASTM E119 OR UL 263.

SECTION 714.4.1.2 THROUGH PENETRATION FIRE STOP SYSTEM
 THROUGH PENETRATIONS SHALL BE PROTECTED BY AN APPROVED PENETRATION FIRE STOP SYSTEM INSTALLED AS TESTED IN ACCORDANCE WITH ASTM E814 OR UL1479. (ASSEMBLY TEST) AND SHALL HAVE A F RATING NOT LESS THAN THE REQUIRED FIRE RESISTIVE RATING OF THE WALL PENETRATING.

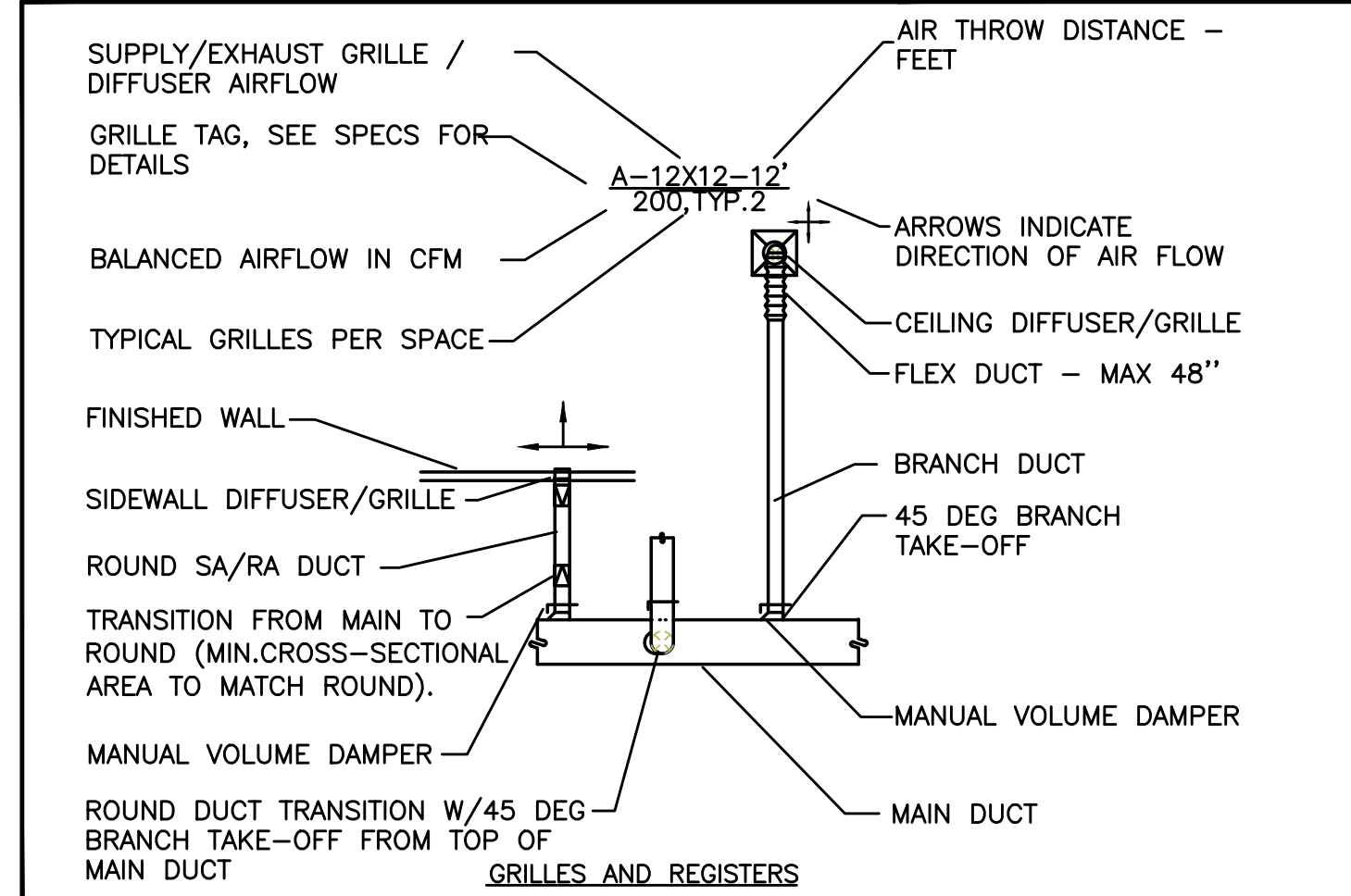
DUCT CONSTRUCTION AND ROUTING:
 • UNLESS PROJECT EXPLICITLY USES A SUB DUCT SYSTEM, SERVED BY ROOF FANS ON A BACK UP POWER SUPPLY, ALL DUCTS ARE ROUTED INDIVIDUALLY TO SIDEWALL OR ROOF TERMINATIONS WITH NO INTER-CONNECTIONS OF DUCT WORK.
 • ALL DUCTWORK IS CONSTRUCTED PER OSMC AND PER SMACNA STANDARDS PER THE REQUIRED PRESSURE CLASSES. ALL DUCTWORK WILL BE SEALED TO BE AIR-TIGHT AND WILL NOT ALLOW TRANSFER OF SMOKE BETWEEN UNITS OR TO LEAK SMOKE INTO SHAFTS.

BUILDING CONSTRUCTION, FIRE RATED WALLS AND RATED SHAFTS:
 • SEE ARCHITECTURAL LIFE SAFETY PLANS FOR RATED WALLS AND SHAFTS
 • SEE ARCHITECTURAL WALL SECTION DETAILS AND SHAFT WALL CONSTRUCTION DETAILS FOR REQUIRED FIRE RATINGS AND CONSTRUCTION METHODS.
 • PROVIDE A UL LISTED FIRE STOP SYSTEM TO MATCH DUCT CONSTRUCTION AND WALL OR FLOOR CEILING CONSTRUCTION TO ENSURE COMPLIANCE WITH ASTM E119 AND UL 263 STANDARDS – WHICH IS DEMONSTRATED BY THE USE OF UL CONSTRUCTION METHODS COMPLYING WITH ASTM E814 OR UL1479.

MECHANICAL SHEET INDEX

M0.01	MECHANICAL LEGENDS, NOTES & SCHEDULES
M0.02	MECHANICAL NOTES & SCHEDULES
M0.03	MECHANICAL SCHEDULES
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M2.05	MECHANICAL ATTIC PLAN
M2.06	MECHANICAL ROOF PLAN
M6.01	MECHANICAL DETAILS
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M6.04	MECHANICAL DETAILS

AIR DISTRIBUTION DETAILS



ELEC HEATER – CEILING

MARK NUMBER	CH 1
DESCRIPTION	RECESSED CEILING
LOCATION	CORRIDOR
SIZE	24X24
WATTS	5000
CONTROLLED BY:	WALL T-STAT
POWER (VOLTS/PHASE) *	208/1
DESIGN WEIGHT (LBS)	30
BASIS OF DESIGN: KING	KDSR

* – ELECTRICAL DATA LISTED FOR REFERENCE ONLY, COORDINATE WITH ELECTRICAL DESIGN BUILD CONTRACTOR FOR VOLTAGE AND PHASE REQUIREMENTS
 ** INSTALLATION BY ELECTRICAL CONTRACTOR

ELECTRIC DUCT HEATER

MARK NUMBER	SF 1
SIZE (KW)	1.44 KW
CFM	210
DUCT SIZE	8"Ø
STEPS	2
MCA	12.6
POWER (VOLTS/PHASE) *	120/1
BASIS OF DESIGN: HOTPOD	HP8

* – ELECTRICAL DATA LISTED FOR REFERENCE ONLY, COORDINATE WITH ELECTRICAL DESIGN BUILD CONTRACTOR FOR VOLTAGE AND PHASE REQUIREMENTS

PROVIDE UNIT W/ 12X12 ACCESS PANEL AT ALL INACCESSIBLE CEILING LOCATIONS.

ELECTRIC WALL HEATER

MARK NUMBER	EH 1	EH 2
TYPE	WALL MOUNT	WALL MOUNT
SIZE (KW)	1.5	1.0
VOLTAGE	240	120

UNITS TO BE SUPPLIED WITH REMOTE THERMOSTAT



MFA Consulting Engineers
 2007 S.W. Ash St.
 Portland, OR 97214
 PHN: (503) 234-0548
 FAX: (503) 234-0677
 INC. WWW.MFA-ENG.COM
 CONTACT: Mark Denyer

MERIDIAN GARDENS

11250 SE DIVISION STREET
 PORTLAND, OREGON 97266

CENTRAL CITY CONCERN

REVISION	DATE	REASON FOR ISSUE

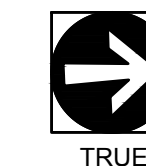
MECHANICAL LEGENDS, NOTES & SCHEDULES

PERMIT SET

DATE: 08/29/2022 PROJECT NUMBER: 203970

SHEET NUMBER

M0.01



MECHANICAL GENERAL NOTES

- A. THE DRAWINGS ARE DIAGRAMMATIC. PROVIDE ALL MATERIAL (NEW AND UNDAMAGED) AND LABOR FOR A COMPLETE AND OPERABLE SYSTEM. VERIFY ALL BUILDING MEASUREMENTS DIMENSIONS AND EQUIPMENT LOCATIONS BEFORE PROCEEDING WITH ANY OF THE WORK.
- B. VERIFY ALL EXISTING CONDITIONS RELATIVE TO THE SCOPE OF WORK. REPORT DISCREPANCIES BACK TO THE ENGINEER.
- C. VERIFY INDICATED (E) DUCTWORK/PIPE SIZES PRIOR TO RECONNECTING NEW EQUIPMENT. EQUIPMENT SHALL NOT BE CONNECTED TO EXISTING DUCT/PIPE OF SMALLER DIAMETER THAN NEW DUCT/PIPE. REPORT DISCREPANCIES BACK TO ENGINEER.
- D. DO NOT FABRICATE EQUIPMENT SUPPORTS/BASES W/O CONFIRMING SPACE EXISTS AND THE BUILDING ATTACHMENT POINTS.
- E. REFER TO THE MECHANICAL SPECIFICATIONS FOR MATERIALS, EQUIPMENT, AND ADDITIONAL CONSTRUCTION INSTRUCTIONS NOT COVERED BY THESE PLANS.
- F. ALL INSTALLATIONS SHALL COMPLY WITH APPLICABLE FEDERAL AND STATE CODES INCLUDING, 2019 OREGON STRUCTURAL SPECIALTY CODE (OSSC) INCLUDING APPENDIX N FOR OREGON FIRE CODE REGULATIONS, 2021 OREGON PLUMBING SPECIALTY CODE (OPSC), 2019 OREGON MECHANICAL SPECIALTY CODE (OMSC), 2021 OREGON ENERGY EFFICIENCY SPECIALTY CODE (OEESC)-BASED ON ASHRAE 90.1-2019, AND NATIONAL FIRE PROTECTION ASSOCIATION (NFPA). WHERE TWO CODES DIFFER THE MORE STRICT OF THE TWO SHALL BE FOLLOWED.
- G. OBTAIN ALL NECESSARY PERMITS AND INSPECTIONS REQUIRED BY THE GOVERNING AUTHORITIES HAVING JURISDICTION. SUBMIT ALL CERTIFICATES PRIOR TO ACCEPTANCE.
- H. COORDINATE ALL MECHANICAL AND CONTROL WORK WITH GENERAL CONTRACTOR, CONTROL CONTRACTOR, ELECTRICAL AND ARCHITECTURAL.
- I. COORDINATE OTHER TRADES FOR PATCH/REPAIR OF WALLS WHERE EXISTING SENSORS ARE REMOVED OR MODIFIED.
- J. PATCH & REPAIR WALLS / FLOORS / CEILING WHERE OLD DUCTWORK/PIPES HAVE BEEN REMOVED TO MATCH EXISTING FINISHES.
- K. COORDINATE WITH OTHER CRAFTS AS REQUIRED TO COMPLETE WORK IN ACCORDANCE WITH CONSTRUCTION SCHEDULE.
- L. PROVIDE OWNER INSTRUCTION BY QUALIFIED PERSONNEL ON EQUIPMENT AND SYSTEMS AT OWNER'S REQUEST.
- M. ALL DUCTWORK SHALL BE GALVANIZED STEEL, UNLESS OTHERWISE INDICATED, CONFORMING TO LATEST SMACNA, ASHRAE, OMSC, NFPA, AND UL STANDARDS.
- N. MANUFACTURERS AND MODEL NUMBERS LISTED IN THE EQUIPMENT SCHEDULES ARE THE BASIS OF DESIGN.
- O. CUT WALLS FOR PROPER EQUIPMENT, DUCT OR PIPE INSTALLATION. FILL HOLES WHICH ARE CUT OVERSIZED FOR A TIGHT FIT AROUND OBJECTS PASSING THROUGH.
- P. PROVIDE UL LISTED FIRESTOP SYSTEM TO MAINTAIN THE CODE REQUIRED F AND T RATING OF THE CONSTRUCTION ASSEMBLY AT A DUCT/PIPE PENETRATION THROUGH A RATED BUILDING CONSTRUCTION.
- Q. INSTALL LABELS ON ALL MECHANICAL EQUIPMENT. SEE SPECIFICATIONS FOR CRITERIA.
- R. CONTROLS AND WIRING SHALL MEET ALL ELECTRICAL REQUIREMENTS OF APPLICABLE ELECTRICAL SPECIFICATIONS AND REQUIREMENTS OF OWNER, BUILDING OFFICIALS AND EQUIPMENT SUPPLIERS OF EQUIPMENT INSTALLED ON PROJECT.
- S. ELECTRIC MOTORS SHALL HAVE BUILT-IN THERMAL OVERLOAD PROTECTION OR BE PROTECTED EXTERNALLY WITH SEPARATE THERMAL OVERLOAD DEVICES, WITH LOW-VOLTAGE RELEASE OR LOCK OUT AS REQUIRED.
- T. ALL NEW EQUIPMENT, PIPING, CONDUIT, AND DUCTWORK SHALL BE INSTALLED PER CURRENT SEISMIC CODE REQUIREMENTS.
- U. PROVIDE LOW LEAK AUTOMATIC DAMPERS ON OUTSIDE AIR, EXHAUST AIR AND RELIEF AIR CONTROL DAMPERS WHERE THESE ARE INDICATED.

SYSTEM COMMISSIONING-VERIFICATION AND TESTING REQUIREMENTS:
ASHRAE 90.1-2019 REQUIREMENTS
SECTION 4.2.5 THROUGH 4.2.5.3

THE OWNER OR GC SHALL PROCURE A COMMISSIONING PROVIDER THAT MEETS ONE OF THE FOLLOWING.

- THE COMMISSIONING PROVIDER SHALL BE:
 - a. A THIRD PARTY ENTITY NOT ASSOCIATED WITH THE BUILDING PROJECT
 - b. AN OWNER'S QUALIFIED EMPLOYEE
 - c. AN INDIVIDUAL ASSOCIATED WITH THE DESIGN FIRM, BUT NOT DIRECTLY ASSOCIATED WITH THE DESIGN OR INSTALLATION OF THE BUILDING SYSTEMS.

EXCEPTIONS:
1. BUILDING IS LESS THAN 10,000 SQ FT

CONTRACTOR RESPONSIBILITIES
* THE CONTRACTOR IS RESPONSIBLE FOR FOLLOWING ALL THE REQUIREMENTS OF ASHRAE 90.1-2019.
* THE GENERAL CONTRACTOR OR OWNER SHALL HIRE AND UTILIZE AN APPROVED CX AGENT
* THE CX AGENT SHALL

- 1. PREPARE A CX PLAN
- 2. OVERSEE THE TAB MEASUREMENTS
- 3. CONDUCT THE PR-FUNCTIONAL & FUNCTIONAL TESTS
- 4. PREPARE THE PRELIMINARY CX REPORT
- 5. REVIEW THE TAB REPORT
- 6. REVIEW THE O&M'S
- 7. PREPARE THE SYSTEMS MANUALS

- * SYSTEMS REQUIRED TO BE COMMISSIONED
 - 1. SERVICE WATER HEATERS
 - 2. MIXING VALVES & RECIRC SYSTEMS
 - 3. ROOFTOP UNIT - HALLWAY VENTILATION
 - 4. SPLIT SYSTEM FAN COILS
 - 5. PTHP'S (SAMPLE SELECTION).
 - 6. DWELLING UNIT EXHAUST FANS (SAMPLE SELECTION).
 - 7. LIGHTING CONTROL SYSTEMS
 - 8. OCCUPANCY SENSORS
 - 9. EMERGENCY POWER SYSTEMS (GENERATOR)
 - 10. THERMOSTAT OPERATIONS AND SET POINTS
 - 11. FIRE PIT 7 BBQ TIMERS AND AUTO-SHUT OFF
 - 12. FIRE PUMP AND DOMESTIC WATER BOOSTER PUMP.



FULL SIZE INTEGRAL ACCESS PANEL FOR ERV S-100 UNIT ACCESS DOOR IS ALSO CEILING ACCESS PANEL. UNIT INSTALLED IN A NON-RATED CEILING. ACCESS DOOR CONTAINS FAN CUT-OFF SWITCH (FAN DISCONNECT) TO ALLOW SERVICE OF ERV.

EXHAUST FANS

MARK NUMBER	EF 1	EF 2	EF 3	EF 4	EF 5	EF 6
TYPE	CEILING CABINET	CEILING CABINET	CEILING CABINET	CEILING CABINET	CEILING CABINET	CEILING CABINET
SYSTEM	ELECTRICAL	TRASH	BATHROOM/SHOWER	BIKE	JANITOR	FIRE & WATER
CFM	100	200	30/80	200	100	200
TOTAL SP. (IN H2O)	0.125	0.125	0.20	0.125	0.125	0.125
RPM	1250	740	1062/1146	740	1250	740
TIP SPEED (FPM)	-	-	NA	-	-	-
MOTOR WATTS OR HP	100 W	127 W	5/11.7 W	127 W	100 W	127 W
CONTROLLED BY	T-STAT	CONTINUOUS	**	CONTINUOUS	LIGHTS	CONTINUOUS
INTERLOCK WITH	NONE	NONE	MOTION SENSOR	NONE	NONE	NONE
FAN SPEED CONTROLLER	NO	NO	YES	YES	NO	NO
WHEEL TYPE	FC	BI	BI	BI	FC	BI
BACK DRAFT DAMPER	GRAVITY	GRAVITY	YES	GRAVITY	GRAVITY	GRAVITY
ISOLATION	RUBBER	RUBBER	RUBBER	RUBBER	RUBBER	RUBBER
DESIGN WEIGHT (LBS)	25	25	25	25	25	25
MAX. SONES	1.5	1.7	0.3/0.6	1.7	1.5	1.7
MAX AMPS - *	1.3	1.8	0.27	1.8	1.3	1.8
POWER (VOLTS/PHASE/HZ) - *	120/60/1	120/60/1	120/1/60	120/60/1	120/60/1	120/60/1
BASIS OF DESIGN:	BROAN L100	BROAN L200	PANASONIC * FV-05-11VKS2	BROAN L200	BROAN L100	BROAN L200

- * FAN TO RUN AT LOW SPEED CONTINUOUSLY, AND INCREASE TO HIGH SPEED UPON ACTIVATION OF THE MOTION SENSOR.
- ** FAN TO INCLUDE LIGHTS, MOTION SENSOR AND MULTI-SPEED CONTROL W/ TIME DELAY. COORDINATE LIGHT OPTION W/ ARCHITECT.
- *** ELECTRICAL DATA LISTED FOR REFERENCE ONLY, COORDINATE WITH ELECTRICAL DEIGN BUILD CONTRACTOR FOR VOLTAGE AND PHASE REQUIREMENTS

3.2 DUCTWORK INSULATION

- A. Ductwork: Insulate the following:
 - 1. All supply and return ductwork in systems routed in unconditioned spaces or exposed to the outside conditions.
 - 2. All outside air intake ducts.
 - 3. All ductwork required to be insulated by code.
 - 4. The last 5' of duct work connected to a louver or exhaust termination.
- B. Insulation Thickness: Select board and blanket insulation of thickness required to provide the following installed R-value.
 - 1. All heating or cooling system supply and return ducts located on the exterior of the insulated building envelope, including ventilated attics, and all outside air intake ducts, R-8.
 - 2. All heating and cooling system supply and return ducts located in unconditioned spaces within the building insulation envelope, R-5.
 - 3. All heating and cooling system supply ducts located in conditioned spaces and where exposed in unfinished spaces or concealed from view in finished spaces, R-3.3. Exposed ductwork in finished spaces shall not be externally insulated.
 - 4. Ducts located within or below concrete slabs on grade, R-4.
- C. Fittings: Install with wire, straps, and duct adhesive as required. To prevent sagging on all rectangular or square ducts over 24" wide, install Gramweld or equal welding pins on the bottom. Maximum spacing 18" on center in both directions.
- D. Installation: Applied with butt joints, all seams sealed with vapor seal mastic or taped with 2" wide vapor-proof, pressure-sensitive tape. Seal all penetrations with vapor barrier adhesive.
- E. Internally Lined Ductwork: Where internally lined ductwork is indicated on the Drawings and/or specified, no exterior insulation is required. Select duct lining to provide the required R-value. Carefully lap the ends of the exterior insulation a minimum of 6" past the interior insulation unless otherwise shown. Seal the end of vapor barrier jacket to the duct with mastic where the vapor barrier is required.
 - E.1. Line Supply and Return ducts for 10' on intake and discharge of fan.
 - E.2. Line Supply ducts routed in vertical shafts directly below RTUs

INDOOR UNITS - *

MARK NUMBER	FC-X 9 MBH	FC-X 12 MBH	FC-X 18 MBH
SYSTEM	SEE FLOOR PLANS	SEE FLOOR PLANS	xxxx
TYPE	WALL MOUNTED	WALL MOUNTED	WALL MOUNTED
EFFICIENCY	SEE OUTDOOR UNIT	SEE OUTDOOR UNIT	SEE OUTDOOR UNIT
NOMINAL COOLING CAPACITY	9,000 BTUH	12,000 BTUH	15,000 BTUH
HEATING CAPACITY	10,900 BTUH	13,600 BTUH	18,000 BTUH
TOTAL SUPPLY CFM - CLG/HTG	459/459	459/459	813/919
OSA CFM	-	-	-
EXTERNAL SP. (H2O)	0.25	0.25	0.25
VOLTS/PHASE	208/1	208/1	208/1
MCA/MOP	15/10	15/10	30/19
WEIGHT	25	25	35
BASIS OF DESIGN	LG LSN090HSV5	LG LSN120HSV5	LG LAN150HYV3
OUTDOOR UNIT	HP-X 3/4 TON	HP-X 1 TON	HP-X 1.25 TON

OUTDOOR UNITS - SPLIT SYSTEM HEAT PUMP

MARK NUMBER	HP-X 3/4 TON	HP-X 1 TON	HP-X 1.25 TON
SYSTEM	xxx	xxx	xxx
TYPE	1-PORT HEAT PUMP	1-PORT HEAT PUMP	1-PORT HEAT PUMP
NORMAL COOLING CAPACITY	9000 BTUH	12,000 BTUH	18,000 BTUH
NORMAL HEATING CAPACITY	9,000 BTUH	12,000 BTUH	20,000 BTUH
EFFICIENCY SEER/EER	23.5/14.52	22.7/12.5	25/15
EFFICIENCY HSPF/COP	11.3/--	11.4/--	13.5/
REFRIGERANT	410 A	410 A	410 A
REFRIGERANT CHARGE	X LBS	X LBS	X LBS
MAX OPERATING TEMPS	115/5	115/5	122/-4
MAX PIPING LENGTH	82 FT	82 FT	115 FT
MAX PIPING HEIGHT	49 FT	32 FT	49 FT
VOLTS-PHASE - **	208/230-1 PHASE	208/230-1 PHASE	208/230-1 PHASE
MCA/MOP - **	10/15 AMPS	10/15 AMPS	19/30 AMPS
COMPRESSOR	VARIABLE SPEED	VARIABLE SPEED	VARIABLE SPEED
WEIGHT	85 LBS	80 LBS	135 LBS
BASIS OF DESIGN	LG LSU090HSV5	LG LSU120HSV5	LG LAU150HYV3

ENERGY RECOVERY VENTILATOR

MARK NUMBER	ERV-1 105 CFM	ERV 2
SYSTEM	SHOWER/STORAGE	CORRIDOR
CFM	65/105 CFM	40 CFM
CORE TYPE	MEDIA MEMBRANE	ENTHALPY PLATE
CONTROL	CONTINUOUS	CONTINUOUS
HEAT	NONE	--
VOLTS-PHASE	120/1	120/1
AMP RATING	0.9	0.15
ESP (H2O)	0.20	0.1
EFFICIENCY @64CFM & 95F	68%	36%
WATTS **	103	154/60
WEIGHT	40 LBS	40 LBS
BASIS OF DESIGN	BROAN* ERVS100S	PANASONIC FV-04VE1

* ELECTRICAL DATA LISTED FOR REFERENCE ONLY, COORDINATE WITH ELECTRICAL DESIGN BUILD CONTRACTOR FOR VOLTAGE AND PHASE REQUIREMENTS



M Consulting Engineers
2007 S.F. Ash St.
Portland, OR 97214
PH: (503) 234-0548
FAX: (503) 234-0677
INC. WWW.MFTA-ENG.COM
CONTACT: Mark Denyer

MERIDIAN GARDENS
11250 SE DIVISION STREET
PORTLAND, OREGON 97266
CENTRAL CITY CONCERN

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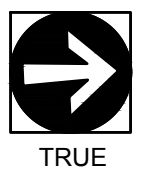
MECHANICAL NOTES & SCHEDULES

PERMIT SET

DATE: 08/29/2022 PROJECT NUMBER: 203970

SHEET NUMBER

M0.02



MERIDIAN GARDENS

Capacity	Max Vertical	Max Length	Quantity	LG model
9000	HP-1 49	82	30	LSU090
12000	HP-2 49	82	23	LSU120
15000	HP-3 98	164	52	LAU150
	Total			105

REFRIGERANT PIPE RUNS

UNIT	Studio/Small office yes/no	GHP-X	CAPACITY BTUH	VERTICAL RISE FT	HORIZONTAL LENGTH FT	ELBOWS 1' per #	TOTAL EQ LENGTH FT	MAX VERTICAL FT	MAX TOTAL FT	MAX BENDS	PASS/FAIL VERTICAL	PASS/FAIL TOTAL	PASS/FAIL BENDS	
101	NO	HP-2	FC-2	12,000	0	65	12	77	49	82	15	YES	YES	YES
102	NO	HP-2	FC-2	12,000	0	65	12	77	49	82	15	YES	YES	YES
104	YES	HP-1	FC-1	9,000	0	50	12	62	49	82	15	YES	YES	YES
105	YES	HP-1	FC-1	9,000	0	45	12	57	49	82	15	YES	YES	YES
106	NO	HP-2	FC-2	12,000	0	25	12	37	49	82	15	YES	YES	YES
107	YES	HP-1	FC-1	9,000	0	15	12	27	49	82	15	YES	YES	YES
108	NO	HP-2	FC-2	12,000	0	15	12	27	49	82	15	YES	YES	YES
109	NO	HP-3	FC-3	15,000	33.5	65	12	110.5	98	164	15	YES	YES	YES
110	NO	HP-3	FC-3	15,000	33.5	92	12	137.5	98	164	15	YES	YES	YES
111	NO	HP-3	FC-3	15,000	33.5	43	9	85.5	98	164	15	YES	YES	YES
113	NO	HP-2	FC-2	12,000	0	62	5	67	49	82	15	YES	YES	YES
114	NO	HP-2	FC-2	12,000	0	62	5	67	49	82	15	YES	YES	YES
115	NO	HP-2	FC-2	12,000	0	26	5	31	49	82	15	YES	YES	YES
116	NO	HP-2	FC-2	12,000	0	24	5	29	49	82	15	YES	YES	YES
117	NO	HP-2	FC-2	12,000	0	24	5	29	49	82	15	YES	YES	YES
118	NO	HP-2	FC-2	12,000	0	62	5	67	49	82	15	YES	YES	YES
120	NO	HP-2	FC-2	12,000	0	64	5	69	49	82	15	YES	YES	YES
121	NO	HP-3	FC-3	15,000	0	86	5	91	98	164	15	YES	YES	YES
126	YES	HP-3	FC-3	15,000	0	142	7	149	98	164	15	YES	YES	YES
127	YES	HP-3	FC-3	15,000	0	149	7	156	98	164	15	YES	YES	YES
201	NO	HP-3	FC-3	15,000	22.5	82	10	114.5	98	164	15	YES	YES	YES
202	NO	HP-3	FC-3	15,000	22.5	64	10	96.5	98	164	15	YES	YES	YES
205	YES	HP-3	FC-3	15,000	22.5	58	11	91.5	98	164	15	YES	YES	YES
206	YES	HP-1	FC-1	9,000	22.5	51	7	80.5	49	82	15	YES	YES	YES
207	YES	HP-3	FC-3	15,000	22.5	54	12	88.5	98	164	15	YES	YES	YES
208	YES	HP-3	FC-3	15,000	22.5	73	12	107.5	98	164	15	YES	YES	YES
209	YES	HP-3	FC-3	15,000	22.5	74	12	108.5	98	164	15	YES	YES	YES
210	YES	HP-3	FC-3	15,000	22.5	64	12	98.5	98	164	15	YES	YES	YES
211	YES	HP-3	FC-3	15,000	22.5	73	12	107.5	98	164	15	YES	YES	YES
212	YES	HP-3	FC-3	15,000	22.5	72	12	106.5	98	164	15	YES	YES	YES
213	YES	HP-3	FC-3	15,000	22.5	90	13	125.5	98	164	15	YES	YES	YES
214	YES	HP-3	FC-3	15,000	22.5	108	13	143.5	98	164	15	YES	YES	YES
215	YES	HP-3	FC-3	15,000	22.5	128	13	163.5	98	164	15	YES	YES	YES
218	YES	HP-1	FC-1	9,000	22.5	30	7	59.5	49	82	15	YES	YES	YES
219	YES	HP-1	FC-1	9,000	22.5	38	7	67.5	49	82	15	YES	YES	YES
221	no	HP-3	FC-3	15,000	15	82	5	102	98	164	15	YES	YES	YES
220	YES	HP-1	FC-1	9,000	22.5	48	8	78.5	49	82	15	YES	YES	YES
222	YES	HP-3	FC-3	15,000	22.5	60	8	90.5	98	164	15	YES	YES	YES
224	YES	HP-3	FC-3	15,000	22.5	62	8	92.5	98	164	15	YES	YES	YES
225	YES	HP-1	FC-1	9,000	22.5	49	9	80.5	49	82	15	YES	YES	YES
226	YES	HP-1	FC-1	9,000	22.5	47	9	78.5	49	82	15	YES	YES	YES
227	YES	HP-3	FC-3	15,000	22.5	68	10	100.5	98	164	15	YES	YES	YES
230	YES	HP-3	FC-3	15,000	22.5	91	13	126.5	98	164	15	YES	YES	YES
231	YES	HP-3	FC-3	15,000	22.5	108	13	143.5	98	164	15	YES	YES	YES
232	YES	HP-3	FC-3	15,000	22.5	91	13	126.5	98	164	15	YES	YES	YES
233	YES	HP-3	FC-3	15,000	22.5	89	13	124.5	98	164	15	YES	YES	YES
234	YES	HP-3	FC-3	15,000	22.5	89	13	124.5	98	164	15	YES	YES	YES
235	YES	HP-3	FC-3	15,000	22.5	109	13	144.5	98	164	15	YES	YES	YES
236	YES	HP-1	FC-1	9,000	20	10	13	43	49	82	15	YES	YES	YES
237	YES	HP-1	FC-1	9,000	20	10	13	43	49	82	15	YES	YES	YES
238	YES	HP-3	FC-3	15,000	22.5	82	13	117.5	98	164	15	YES	YES	YES
239	YES	HP-1	FC-1	9,000	22.5	42	10	74.5	49	82	15	YES	YES	YES
240	YES	HP-1	FC-1	9,000	22.5	45	10	77.5	49	82	15	YES	YES	YES
242	NO	HP-2	FC-2	12,000	22.5	48	10	80.5	49	82	15	YES	YES	YES
301	NO	HP-3	FC-3	15,000	13	84	10	107	98	164	15	YES	YES	YES
302	NO	HP-3	FC-3	15,000	13	64	10	87	98	164	15	YES	YES	YES
305	YES	HP-1	FC-1	9,000	13	50	8	71	49	82	15	YES	YES	YES
306	YES	HP-1	FC-1	9,000	13	50	8	71	49	82	15	YES	YES	YES
307	YES	HP-1	FC-1	9,000	13	50	7	70	49	82	15	YES	YES	YES
308	YES	HP-1	FC-1	9,000	13	60	9	82	49	82	15	YES	YES	YES
309	YES	HP-3	FC-3	15,000	13	98	9	120	98	164	15	YES	YES	YES
310	YES	HP-3	FC-3	15,000	13	88	9	110	98	164	15	YES	YES	YES
311	YES	HP-3	FC-3	15,000	13	68	9	90	98	164	15	YES	YES	YES
312	YES	HP-3	FC-3	15,000	13	68	9	90	98	164	15	YES	YES	YES
313	YES	HP-3	FC-3	15,000	13	78	9	100	98	164	15	YES	YES	YES
314	YES	HP-3	FC-3	15,000	13	88	9	110	98	164	15	YES	YES	YES
315	YES	HP-3	FC-3	15,000	13	98	9	120	98	164	15	YES	YES	YES
318	YES	HP-1	FC-1	9,000	13	45	7	65	49	82	15	YES	YES	YES
319	YES	HP-1	FC-1	9,000	13	45	7	65	49	82	15	YES	YES	YES
320	YES	HP-1	FC-1	9,000	13	50	7	70	49	82	15	YES	YES	YES
322	YES	HP-1	FC-1	9,000	13	60	7	80	49	82	15	YES	YES	YES
324	YES	HP-1	FC-1	9,000	13	60	7	80	49	82	15	YES	YES	YES
325	YES	HP-1	FC-1	9,000	13	61	7	81	49	82	15	YES	YES	YES
326	YES	HP-1	FC-1	9,000	13	61	7	81	49	82	15	YES	YES	YES
327	YES	HP-1	FC-1	9,000	13	54	8	75	49	82	15	YES	YES	YES
330	YES	HP-3	FC-3	15,000	13	65	7	85	98	164	15	YES	YES	YES
331	YES	HP-3	FC-3	15,000	13	65	8	86	98	164	15	YES	YES	YES
332	YES	HP-1	FC-1	9,000	13	61	8	82	49	82	15	YES	YES	YES
333	YES	HP-1	FC-1	9,000	13	61	7	81	49	82	15	YES	YES	YES

MERIDIAN GARDENS

Capacity	Max Vertical	Max Length	Quantity	LG model
9000	HP-1 49	82	30	LSU090
12000	HP-2 49	82	23	LSU120
15000	HP-3 98	164	52	LAU150
	Total			105

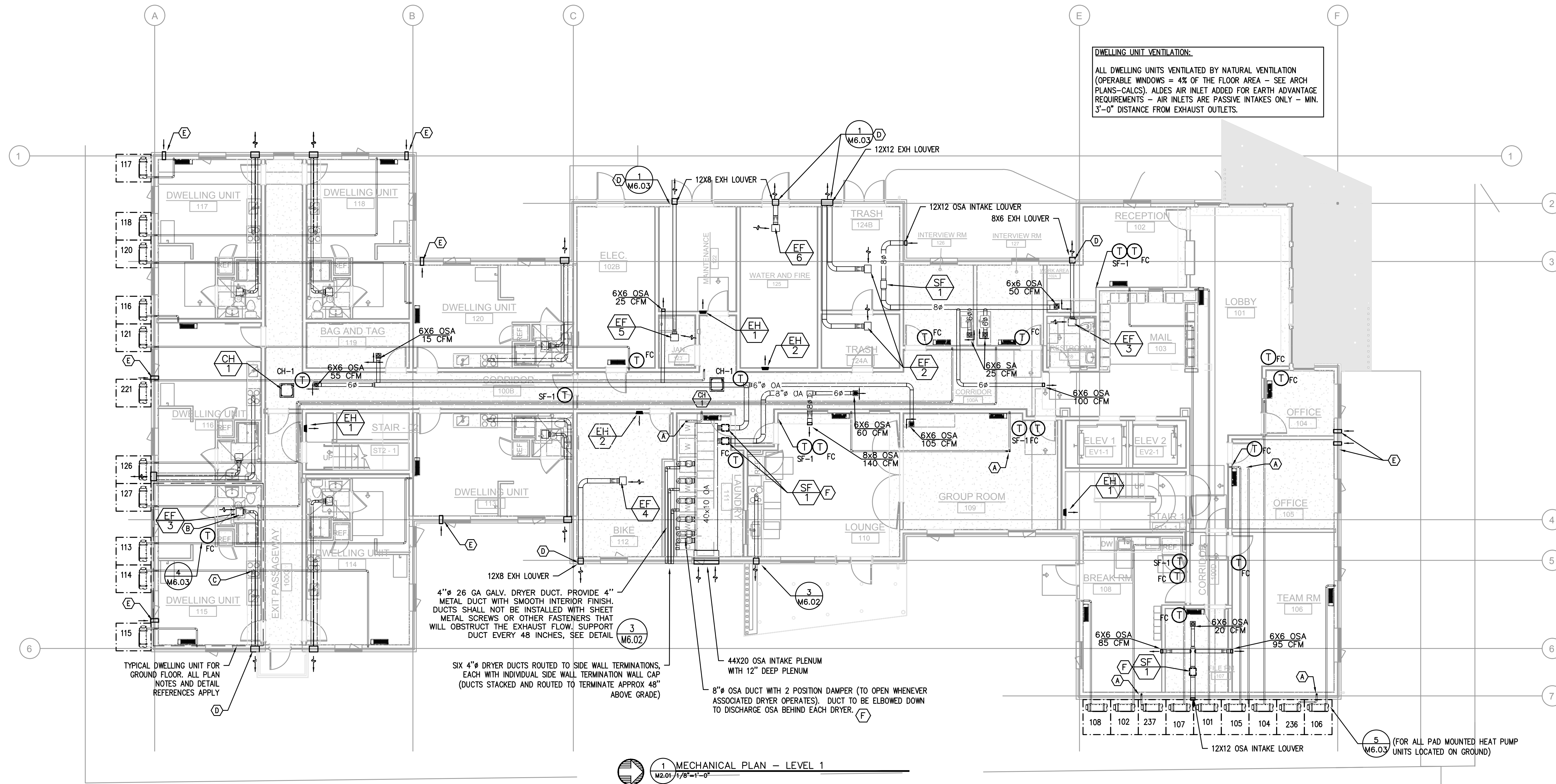
REFRIGERANT PIPE RUNS

UNIT	Studio/Small office yes/no	GHP-X	CAPACITY BTUH	VERTICAL RISE	HORIZONTAL LENGTH	ELBOWS 1' per	TOTAL EQ LENGTH	MAX VERTICAL	MAX TOTAL	MAX BENDS	PASS/FAIL VERTICAL	PASS/FAIL TOTAL	PASS/FAIL BENDS	
334	YES	HP-1	FC-1	9,000	13	62	7	82	49	82	15	YES	YES	YES
335	YES	HP-3	FC-3	15,000	13	106	10	129	98	164	15	YES	YES	YES
336	YES	HP-3	FC-3	15,000	13	115	10	138	98	164	15	YES	YES	YES
337	YES	HP-3	FC-3	15,000	13	100	10	123	98	164	15	YES	YES	YES
338	YES	HP-3	FC-3	15,000	13	90	10	113	98	164	15	YES	YES	YES
339	YES	HP-1	FC-1	9,000	13	41	8	62	49	82	15	YES	YES	YES
340	YES	HP-1	FC-1	9,000	13	41	8	62	49	82	15	YES	YES	YES
342	NO	HP-3	FC-3	15,000	13	65	7	85	98	164	15	YES	YES	YES
403	NO	HP-2	FC-2	12,000	6	48	5	59	49	82	15	YES	YES	YES
404	NO	HP-2	FC-2	12,000	6	48	5	59	49	82	15	YES	YES	YES
405	NO	HP-3	FC-3	15,000	6	78	7	91	98	164	15	YES	YES	YES
406	NO	HP-3	FC-3	15,000	6	83	7	96	98	164	15	YES	YES	YES
407	NO	HP-2	FC-2	12,000	6	68	7	81	49	82	15	YES	YES	YES
408	NO	HP-3	FC-3	15,000	6	81	7	94	98	164	15	YES	YES	YES
409	NO	HP-2	FC-2	12,000	6	61	7	74	49	82	15	YES	YES	YES
411	NO	HP-2	FC-2	12,000	6	40	6	52	49	82	15	YES	YES	YES
412	NO	HP-2	FC-2	12,000	6	48	6	60	49	82	15	YES	YES	YES
416	NO	HP-2	FC-2	12,000	6	48	6	60	49	82	15	YES	YES	YES
417	NO	HP-2	FC-2	12,000	6	35	5	46	49	82	15	YES	YES	YES
418	NO	HP-2	FC-2	12,000	6	46	5							

KEY NOTES:

- (A) — REFRIGERANT LINE SETS FROM CONDENSING UNITS ON LEVEL 1/ROOF, TO FAN COILS SEE UNIT NUMBERS AND ROUTING FOR EXACT PLACEMENT. CLT PENETRATION, 3-1/2" HOLE, ALL HOLES SPACED 2" MIN. APART.
- (B) — PANASONIC WHISPERGREEN CEILING FAN WITH 4" Ø DUCT TO ROOF OR EXTERIOR WALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO FAN, FAN TO OPERATE AT LOW SPEED CONTINUOUS (30CFM) AND INCREASE TO 80CFM WHEN BUILT-IN MOTION SENSOR IS ACTIVATED. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. SEE (1) (2) M6.01 M6.01
- (C) — 6" Ø HOOD DUCT TO ROOF/EXTERIOR WALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO HOOD. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. HOOD FAN TO OPERATE INTERMITTENTLY. PER 2019 OMSC 505.3 HOOD DUCTS SHALL HAVE SMOOTH INNER WALLS AND SHALL BE AIR TIGHT AND BE EQUIPPED WITH A BACKDRAFT DAMPER.
- (D) — EXTERIOR EXHAUST PLENUM — SEE (3) M6.01 MAINTAIN 36" CLEAR TO OPERABLE WINDOWS AND DOORS.
- (E) — ALDES AIR INLET, SEE (4) M6.02
- (F) — PROVIDE 12X12 ACCESS PANEL FOR SF-1.

DWELLING UNIT VENTILATION:
 ALL DWELLING UNITS VENTILATED BY NATURAL VENTILATION (OPERABLE WINDOWS = 4% OF THE FLOOR AREA - SEE ARCH PLANS-CALCS). ALDES AIR INLET ADDED FOR EARTH ADVANTAGE REQUIREMENTS - AIR INLETS ARE PASSIVE INTAKES ONLY - MIN. 3'-0" DISTANCE FROM EXHAUST OUTLETS.



4" Ø 26 GA GALV. DRYER DUCT. PROVIDE 4" METAL DUCT WITH SMOOTH INTERIOR FINISH. DUCTS SHALL NOT BE INSTALLED WITH SHEET METAL SCREWS OR OTHER FASTENERS THAT WILL OBSTRUCT THE EXHAUST FLOW. SUPPORT DUCT EVERY 48 INCHES, SEE DETAIL (3) M6.02

SIX 4" Ø DRYER DUCTS ROUTED TO SIDE WALL TERMINATIONS, EACH WITH INDIVIDUAL SIDE WALL TERMINATION WALL CAP (DUCTS STACKED AND ROUTED TO TERMINATE APPROX 48" ABOVE GRADE)

44x20 OSA INTAKE PLENUM WITH 12" DEEP PLENUM
 8" Ø OSA DUCT WITH 2 POSITION DAMPER (TO OPEN WHENEVER ASSOCIATED DRYER OPERATES). DUCT TO BE ELBOWED DOWN TO DISCHARGE OSA BEHIND EACH DRYER. (F)

TYPICAL DWELLING UNIT FOR GROUND FLOOR. ALL PLAN NOTES AND DETAIL REFERENCES APPLY

MECHANICAL PLAN - LEVEL 1
 M2.01 1/8"=1'-0"



MEDIA CONSULTING ENGINEERS
 2007 S.E. Ash St.
 Portland, OR 97214
 PHN: (503) 234-0548
 FAX: (503) 234-0677
 WWW.MEDIA-ENG.COM
 CONTACT: Mark Denyer

MERIDIAN GARDENS
 11250 SE DIVISION STREET
 PORTLAND, OREGON 97266
 CENTRAL CITY CONCERN

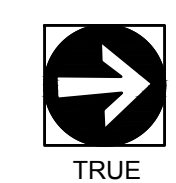
REVISION	DATE	REASON FOR ISSUE

MECHANICAL PLAN - LEVEL 1

PERMIT SET

DATE: 08/29/2022 PROJECT NUMBER: 203970

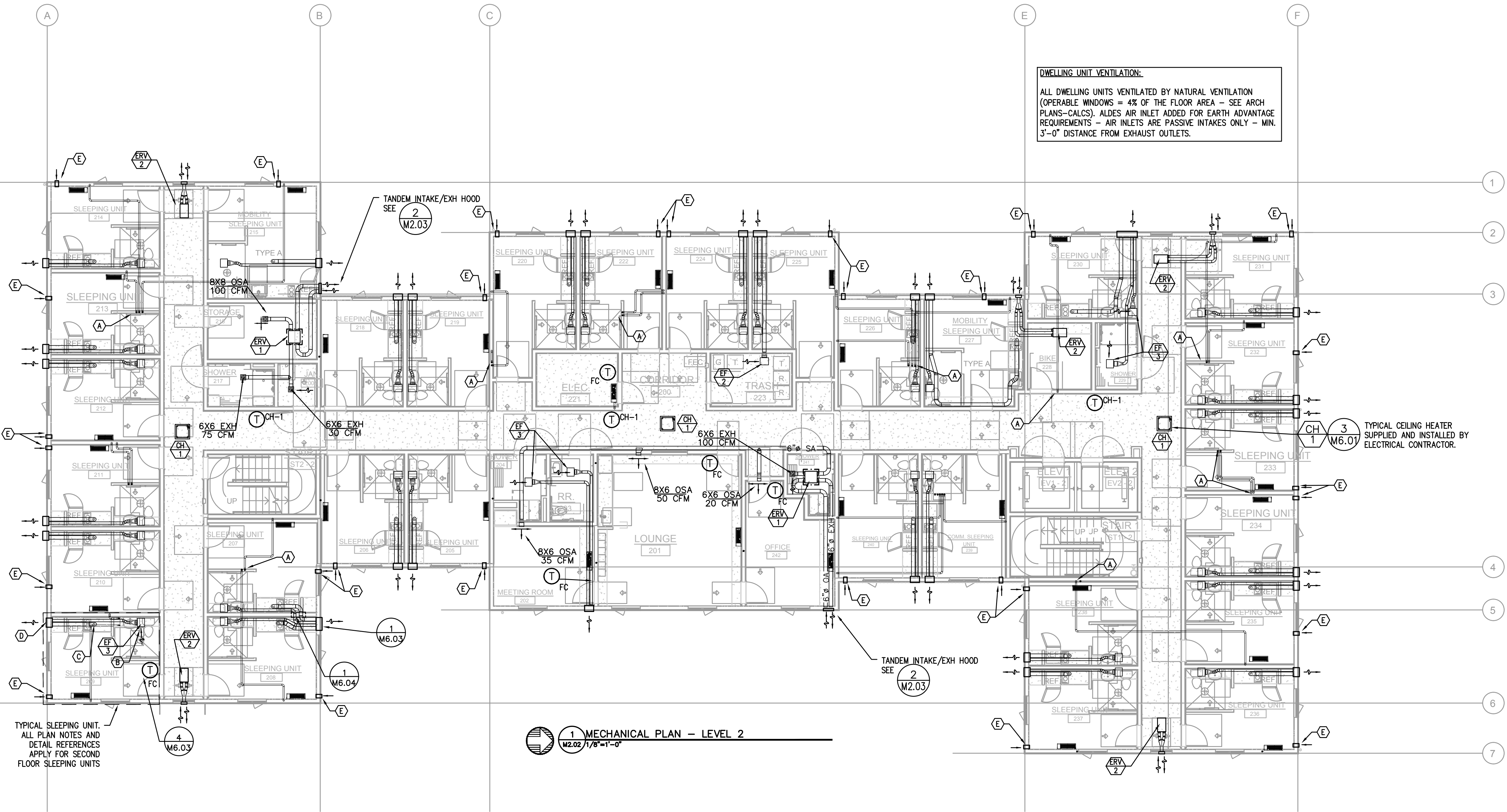
SHEET NUMBER: **M2.01**



KEY NOTES:

- (A) — REFRIGERANT LINE SETS FROM CONDENSING UNITS ON LEVEL 1/ROOF, TO FAN COILS SEE UNIT NUMBERS AND ROUTING FOR EXACT PLACEMENT. CLT PENETRATION, 3-1/2" HOLE, ALL HOLES SPACED 2" MIN. APART.
- (B) — PANASONIC WHISPERGREEN CEILING FAN WITH 4" Ø DUCT TO ROOF OR EXTERIOR WALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO FAN, FAN TO OPERATE AT LOW SPEED CONTINUOUS (30CFM) AND INCREASE TO 80CFM WHEN BUILT-IN MOTION SENSOR IS ACTIVATED. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. SEE 1 2 M6.01 M6.01
- (C) — 6" Ø HOOD DUCT TO ROOF/EXTERIOR WALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO HOOD. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. HOOD FAN TO OPERATE INTERMITTENTLY. PER 2019 OMSC 505.3 HOOD DUCTS SHALL HAVE SMOOTH INNER WALLS AND SHALL BE AIR TIGHT AND BE EQUIPPED WITH A BACKDRAFT DAMPER.
- (D) — EXTERIOR EXHAUST PLENUM — SEE 3 M6.01 MAINTAIN 36" CLEAR TO OPERABLE WINDOWS AND DOORS.
- (E) — ALDES AIR INLET, SEE 4 M6.02
- (F) — PROVIDE 12X12 ACCESS PANEL FOR SF-1.

DWELLING UNIT VENTILATION:
 ALL DWELLING UNITS VENTILATED BY NATURAL VENTILATION (OPERABLE WINDOWS = 4% OF THE FLOOR AREA - SEE ARCH PLANS-CALCS). ALDES AIR INLET ADDED FOR EARTH ADVANTAGE REQUIREMENTS - AIR INLETS ARE PASSIVE INTAKES ONLY - MIN. 3'-0" DISTANCE FROM EXHAUST OUTLETS.



TYPICAL SLEEPING UNIT.
 ALL PLAN NOTES AND
 DETAIL REFERENCES
 APPLY FOR SECOND
 FLOOR SLEEPING UNITS

1 MECHANICAL PLAN - LEVEL 2
1 M2.02 1/8"=1'-0"



MEDIA Consulting Engineers
 2007 S.W. Ash St.
 Portland, OR 97214
 PHN: (503) 234-0548
 FAX: (503) 234-0677
 INC. WWW.MEDIA-ENG.COM
 CONTACT: Mark Denyer

MERIDIAN GARDENS
 11250 SE DIVISION STREET
 PORTLAND, OREGON 97266
 CENTRAL CITY CONCERN

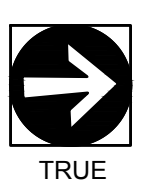
REVISION	DATE	REASON FOR ISSUE

MECHANICAL PLAN - LEVEL 2

PERMIT SET

DATE 08/29/2022	PROJECT NUMBER 203970
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SHEET NUMBER
M2.02

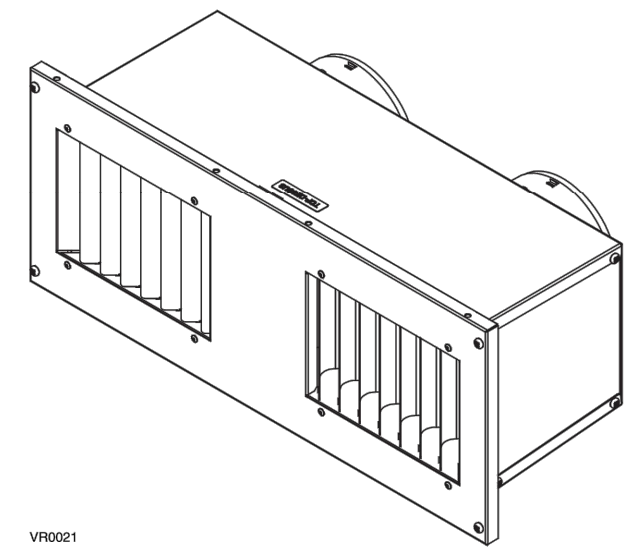


KEY NOTES:

- (A) — REFRIGERANT LINE SETS FROM CONDENSING UNITS ON LEVEL 1/ROOF, TO FAN COILS SEE UNIT NUMBERS AND ROUTING FOR EXACT PLACEMENT. CLT PENETRATION, 3-1/2" HOLE, ALL HOLES SPACED 2" MIN. APART.
- (B) — PANASONIC WHISPERGREEN CEILING FAN WITH 4" DUCT TO ROOF OR EXTERIOR WALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO FAN, FAN TO OPERATE AT LOW SPEED CONTINUOUS (30CFM) AND INCREASE TO 80CFM WHEN BUILT-IN MOTION SENSOR IS ACTIVATED. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. SEE 1 2 M6.01 M6.01
- (C) — 6" HOOD DUCT TO ROOF/EXTERIOR WALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO HOOD. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. HOOD FAN TO OPERATE INTERMITTENTLY PER 2019 OMSC 505.3 HOOD DUCTS SHALL HAVE SMOOTH INNER WALLS AND SHALL BE AIR TIGHT AND BE EQUIPPED WITH A BACKDRAFT DAMPER.
- (D) — EXTERIOR EXHAUST PLENUM — SEE 3 M6.01 MAINTAIN 36" CLEAR TO OPERABLE WINDOWS AND DOORS.
- (E) — ALDES AIR INLET, SEE 4 M6.02
- (F) — PROVIDE 12X12 ACCESS PANEL FOR SF-1.

BROAN Metal Tandem Hood

Part no.: V14695



ONE OUTDOOR PORT FOR DOUBLE USAGE

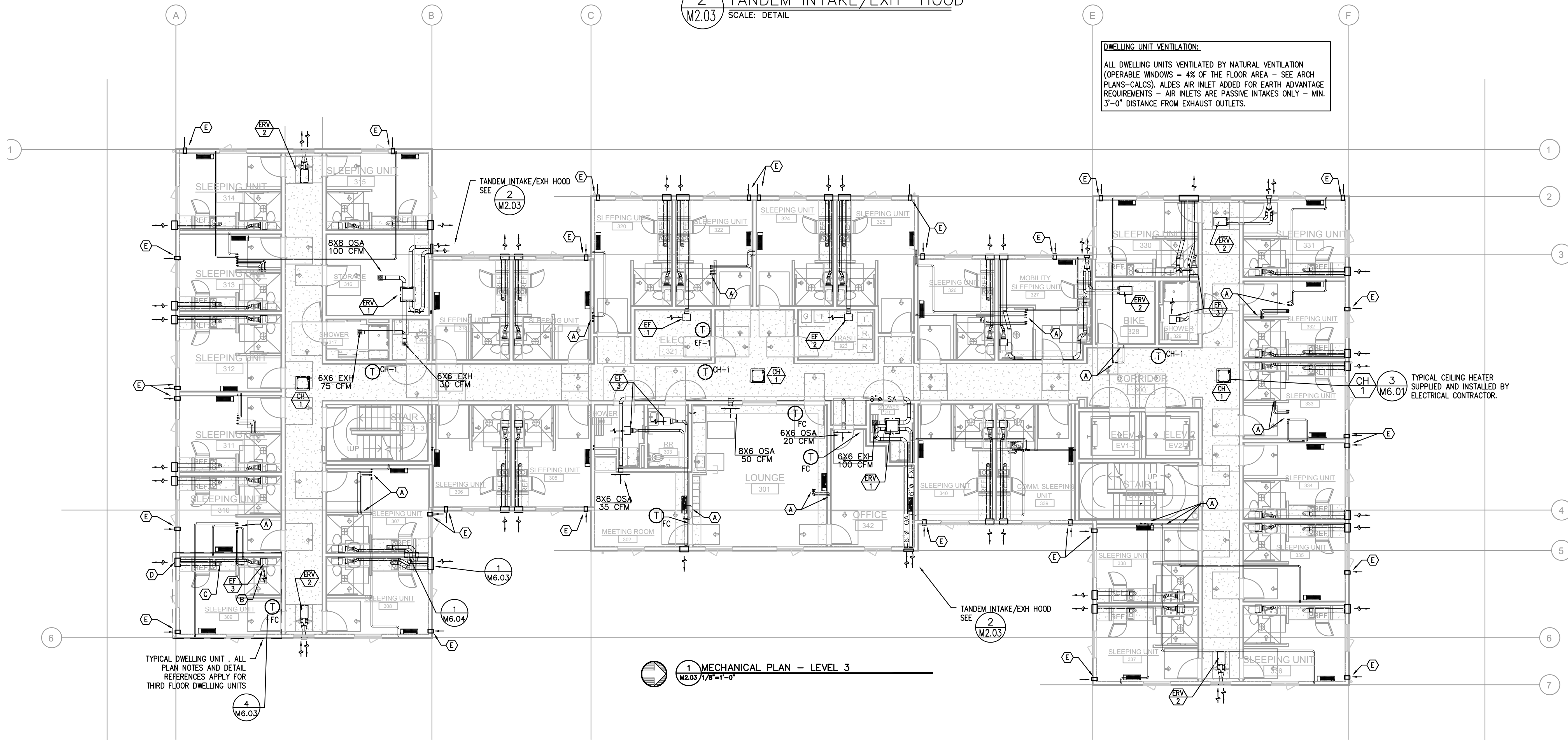
More than ever, today's builders and contractors are aiming to optimize material, manpower and time. One way to achieve this goal when installing a ventilation system is to install our new metal tandem hood. This new device simplifies the installation not only because only one hole is required on the exterior wall. In fact, every installer knows that locating efficiently one outdoor port is easier (and faster) than locating two. Moreover, there is hardly any intercontamination!

- Galvanized satin steel cover grille (ready to be painted by the HVAC contractor to match building's color).
- One 7" x 18" hole in the exterior wall.
- Tandem box eliminates the need of a Tandem transition.
- Intake and exhaust ducts connection can be performed either on left or right port, for more convenience.
- Outdoor connection performed in half time.
- Suitable for ventilation unit producing an airflow lower than 120 CFM (for higher airflow capacity, please confirm that the overall pressure losses of the ventilation system is suitable for the unit used). See chart below.

Pressure Drops (Intake and Exhaust)

2 TANDEM INTAKE/EXH HOOD
SCALE: DETAIL

DWELLING UNIT VENTILATION:
ALL DWELLING UNITS VENTILATED BY NATURAL VENTILATION (OPERABLE WINDOWS = 4% OF THE FLOOR AREA - SEE ARCH PLANS-CALCS). ALDES AIR INLET ADDED FOR EARTH ADVANTAGE REQUIREMENTS - AIR INLETS ARE PASSIVE INTAKES ONLY - MIN. 3'-0" DISTANCE FROM EXHAUST OUTLETS.



TYPICAL DWELLING UNIT - ALL PLAN NOTES AND DETAIL REFERENCES APPLY FOR THIRD FLOOR DWELLING UNITS

1 MECHANICAL PLAN - LEVEL 3
SCALE: 1/8"=1'-0"



MEDIA Consulting Engineers
2007 S.W. Ash St.
Portland, OR 97214
PH: (503) 234-0548
FAX: (503) 234-0677
WWW.MEDIA-ENG.COM
CONTACT: Mark Denyer

MERIDIAN GARDENS
11250 SE DIVISION STREET
PORTLAND, OREGON 97266
CENTRAL CITY CONCERN

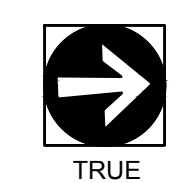
REVISION	DATE	REASON FOR ISSUE

MECHANICAL PLAN - LEVEL 3

PERMIT SET

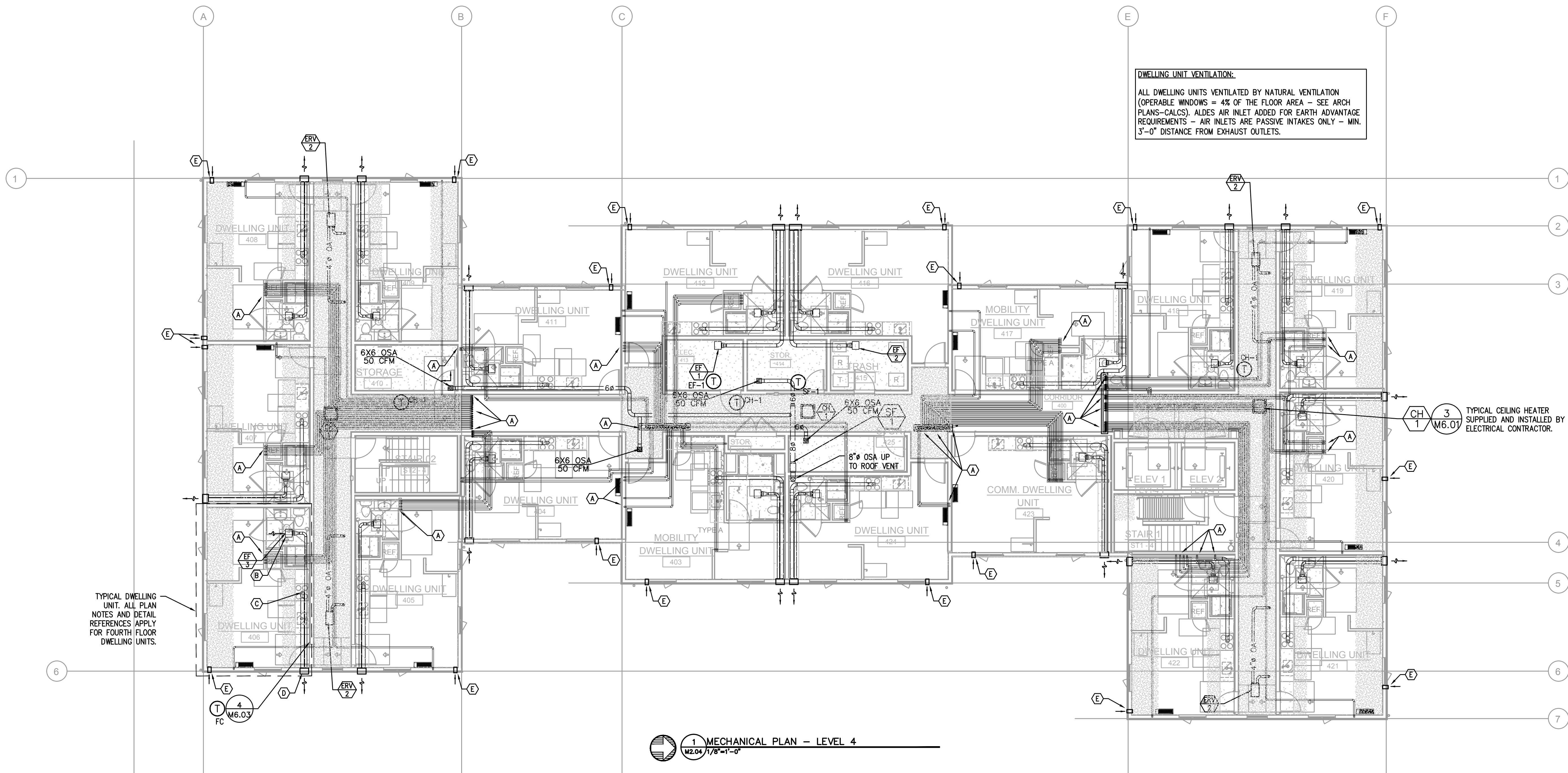
DATE: 08/29/2022 PROJECT NUMBER: 203970

SHEET NUMBER: **M2.03**



KEY NOTES:

- (A) — REFRIGERANT LINE SETS FROM CONDENSING UNITS ON LEVEL 1/ROOF, TO FAN COILS SEE UNIT NUMBERS AND ROUTING FOR EXACT PLACEMENT. CLT PENETRATION, 3-1/2" HOLE, ALL HOLES SPACED 2" MIN. APART.
- (B) — PANASONIC WHISPERGREEN CEILING FAN WITH 4" Ø DUCT TO ROOF OR EXTERIOR WALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO FAN, FAN TO OPERATE AT LOW SPEED CONTINUOUS (30CFM) AND INCREASE TO 80CFM WHEN BUILT-IN MOTION SENSOR IS ACTIVATED. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. SEE 1 2 M6.01
- (C) — 6" Ø HOOD DUCT TO ROOF/EXTERIOR WALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO HOOD. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. HOOD FAN TO OPERATE INTERMITTENTLY. PER 2019 OMSC 505.3 HOOD DUCTS SHALL HAVE SMOOTH INNER WALLS AND SHALL BE AIR TIGHT AND BE EQUIPPED WITH A BACKDRAFT DAMPER.
- (D) — EXTERIOR EXHAUST PLENUM — SEE 3 M6.01 MAINTAIN 36" CLEAR TO OPERABLE WINDOWS AND DOORS.
- (E) — ALDES AIR INLET, SEE 4 M6.02
- (F) — PROVIDE 12X12 ACCESS PANEL FOR SF-1.



TYPICAL DWELLING UNIT. ALL PLAN NOTES AND DETAIL REFERENCES APPLY FOR FOURTH FLOOR DWELLING UNITS.

1 MECHANICAL PLAN - LEVEL 4
M2.04 1/8"=1'-0"



MEDIA Consulting Engineers
2007 S.E. Ash St.
Portland, OR 97214
PH: (503) 234-0548
FAX: (503) 234-0677
WWW.MEDIA-ENG.COM
CONTACT: Mark Denyer

MERIDIAN GARDENS

11250 SE DIVISION STREET
PORTLAND, OREGON 97266

CENTRAL CITY CONCERN

REVISION	DATE	REASON FOR ISSUE

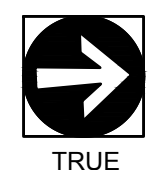
MECHANICAL PLAN- LEVEL 4

PERMIT SET

DATE 08/29/2022	PROJECT NUMBER 203970
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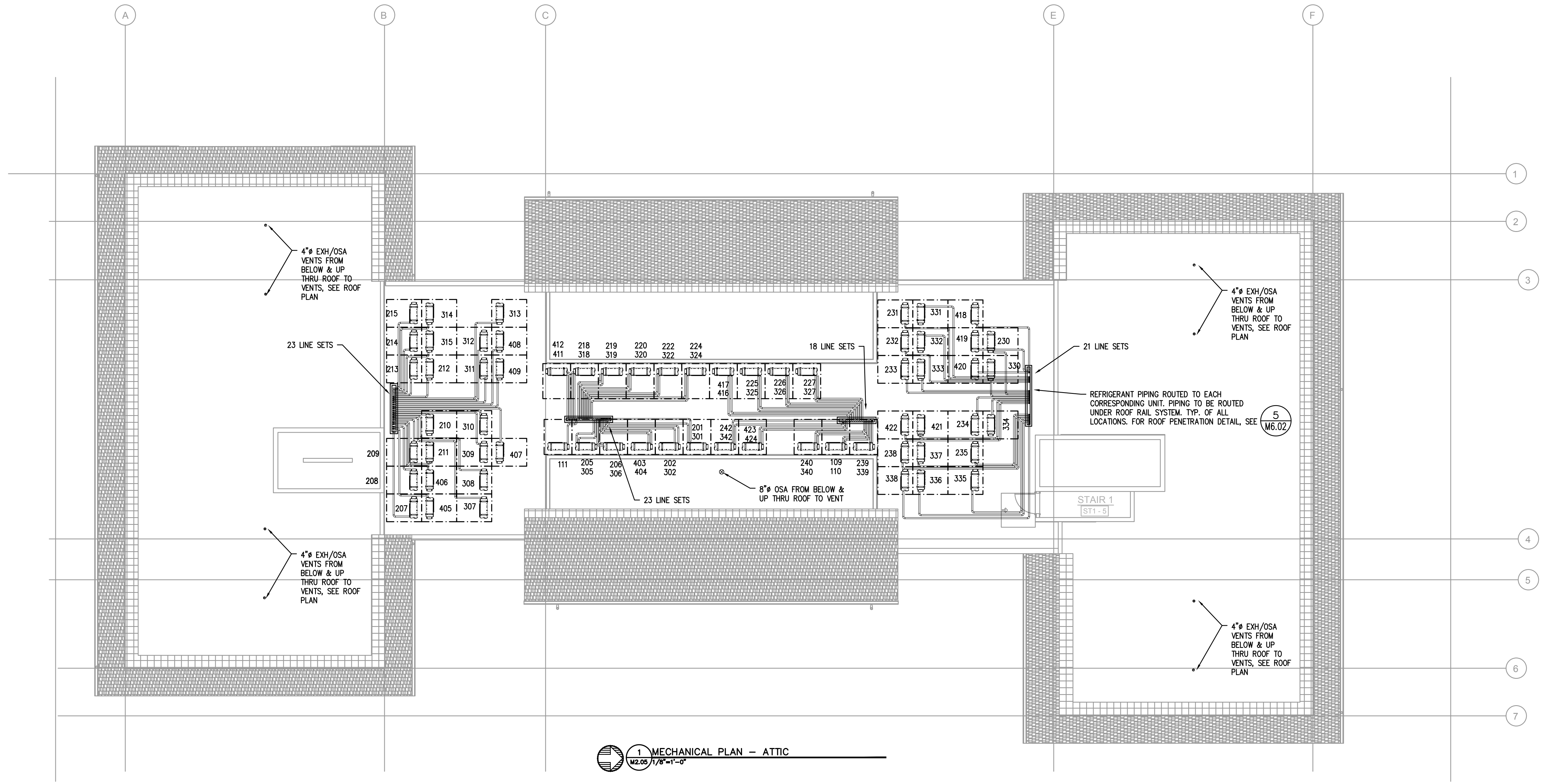
SHEET NUMBER

M2.04

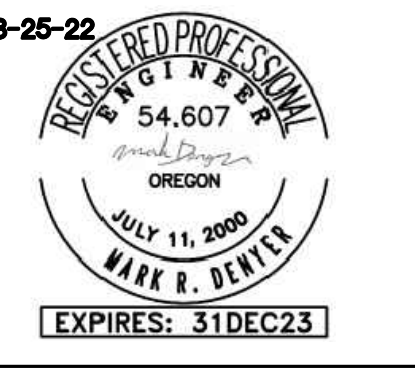


KEY NOTES:

- (A) — REFRIGERANT LINE SETS FROM CONDENSING UNITS ON LEVEL 1/ROOF, TO FAN COILS SEE UNIT NUMBERS AND ROUTING FOR EXACT PLACEMENT. CLT PENETRATION, 3-1/2" HOLE, ALL HOLES SPACED 2" MIN. APART.
- (B) — PANASONIC WHISPERGREEN CEILING FAN WITH 4" Ø DUCT TO ROOF OR EXTERIOR WALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO FAN, FAN TO OPERATE AT LOW SPEED CONTINUOUS (30CFM) AND INCREASE TO 80CFM WHEN BUILT-IN MOTION SENSOR IS ACTIVATED. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. SEE 1 M6.01 2 M6.01
- (C) — 6" Ø HOOD DUCT TO ROOF/EXTERIOR WALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO HOOD. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. HOOD FAN TO OPERATE INTERMITTENTLY. PER 2019 OMSC 505.3 HOOD DUCTS SHALL HAVE SMOOTH INNER WALLS AND SHALL BE AIR TIGHT AND BE EQUIPPED WITH A BACKDRAFT DAMPER.
- (D) — EXTERIOR EXHAUST PLENUM — SEE 3 M6.01 MAINTAIN 36" CLEAR TO OPERABLE WINDOWS AND DOORS.
- (E) — ALDES AIR INLET, SEE 4 M6.02
- (F) — PROVIDE 12X12 ACCESS PANEL FOR SF-1.



1 MECHANICAL PLAN — ATTIC
M2.05 1/8"=1'-0"



M F I A Consulting Engineers
2007 S.E. Ash St.
Portland, OR 97214
PH: (503) 234-0548
FAX: (503) 234-0677
INC. WWW.MFIA-ENG.COM
CONTACT: Mark Denyer

MERIDIAN GARDENS
11250 SE DIVISION STREET
PORTLAND, OREGON 97266
CENTRAL CITY CONCERN

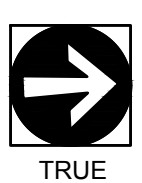
REVISION	DATE	REASON FOR ISSUE

MECHANICAL PLAN - ATTIC

PERMIT SET

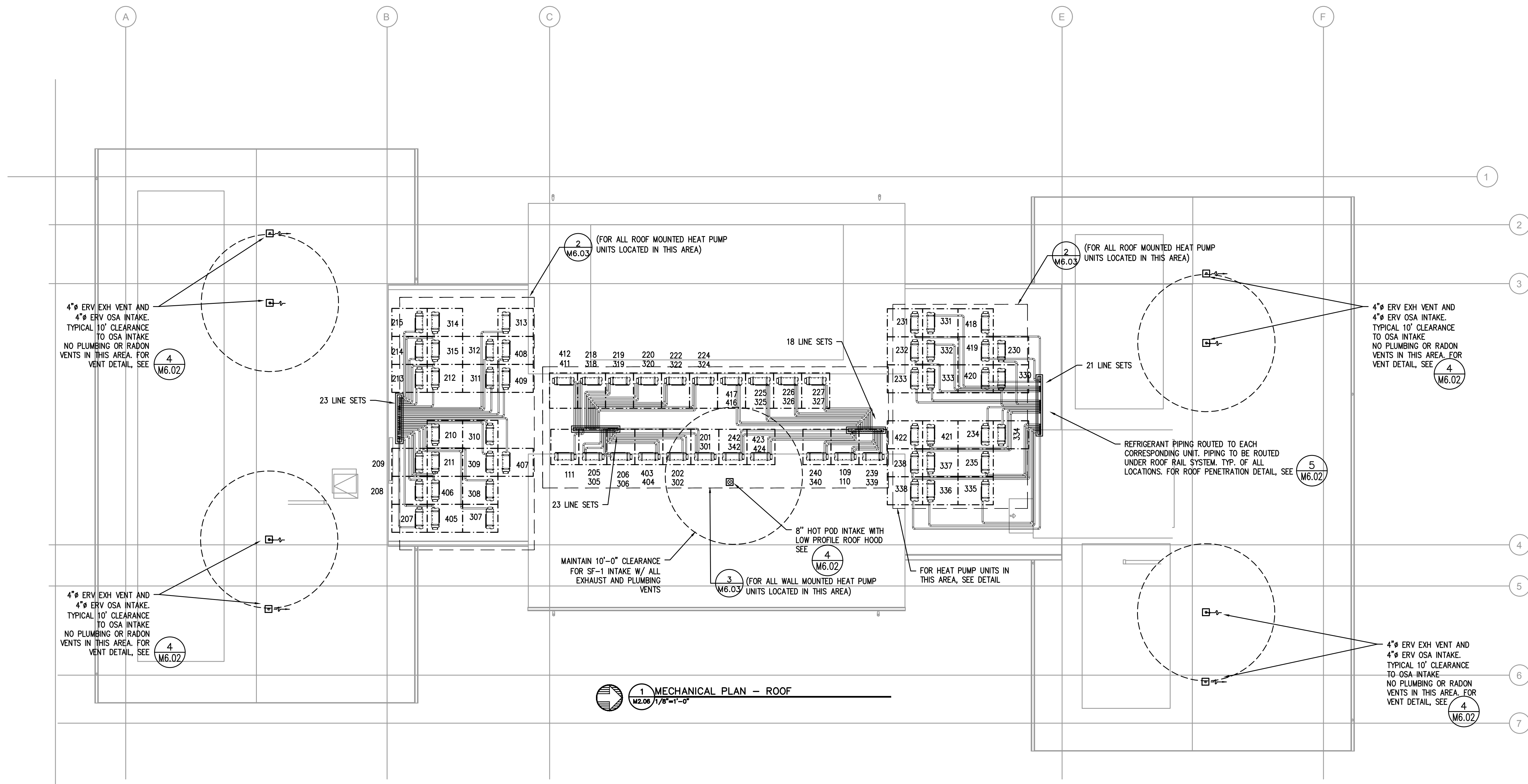
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SHEET NUMBER: **M2.05**

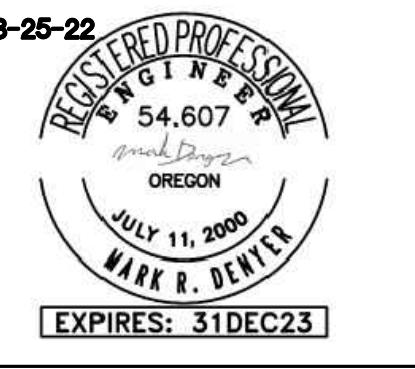


KEY NOTES:

- (A) — REFRIGERANT LINE SETS FROM CONDENSING UNITS ON LEVEL 1/ROOF, TO FAN COILS SEE UNIT NUMBERS AND ROUTING FOR EXACT PLACEMENT. CLT PENETRATION, 3-1/2" HOLE, ALL HOLES SPACED 2" MIN. APART.
- (B) — PANASONIC WHISPERGREEN CEILING FAN WITH 4" DUCT TO ROOF OR EXTERIOR WALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO FAN, FAN TO OPERATE AT LOW SPEED CONTINUOUS (30CFM) AND INCREASE TO 80CFM WHEN BUILT-IN MOTION SENSOR IS ACTIVATED. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. SEE (1) (2) (M6.01) (M6.01)
- (C) — 6" HOOD DUCT TO ROOF/EXTERIOR WALL TERMINATION VIA SOFFIT(S) PROVIDED. BACK DRAFT DAMPER INTEGRAL TO HOOD. INSULATED FINAL 5' OF DUCTWORK. NO DUCTWORK SHALL PENETRATE RATED ASSEMBLY. HOOD FAN TO OPERATE INTERMITTENTLY. PER 2019 OMSC 505.3 HOOD DUCTS SHALL HAVE SMOOTH INNER WALLS AND SHALL BE AIR TIGHT AND BE EQUIPPED WITH A BACKDRAFT DAMPER.
- (D) — EXTERIOR EXHAUST PLENUM — SEE (3) (M6.01) MAINTAIN 36" CLEAR TO OPERABLE WINDOWS AND DOORS.
- (E) — ALDES AIR INLET, SEE (4) (M6.02)
- (F) — PROVIDE 12X12 ACCESS PANEL FOR SF-1.



1 MECHANICAL PLAN - ROOF
M2.06 1/8"=1'-0"



M F I A Consulting Engineers
2007 S.E. Ash St.
Portland, OR 97214
PH: (503) 234-0548
FAX: (503) 234-0677
WWW.MFIA-ENG.COM
CONTACT: Mark Denyer

MERIDIAN GARDENS
11250 SE DIVISION STREET
PORTLAND, OREGON 97266
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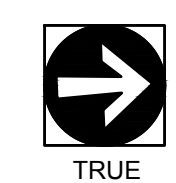
REVISION	DATE	REASON FOR ISSUE

MECHANICAL PLAN - ROOF

PERMIT SET

DATE: 08/29/2022 PROJECT NUMBER: 203970

SHEET NUMBER: **M2.06**



WhisperComfort Energy Recovery Ventilator

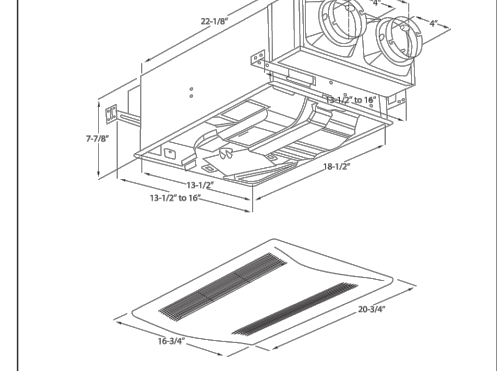
Specification Submittal Data / Panasonic Ventilation Fan

Description
UL listed ceiling or wall mount Energy Recovery Ventilator provides a tempered air supply, humidity control, and a balanced amount of exhaust to help maintain neutral pressure throughout the home. Panasonic ERV shall not be installed in a bathroom. Only one unit is needed for a 1,750 sq. ft. 2 bedroom home to meet the ASHRAE 62.2 ventilation requirement.

Motor/Blower
• Fully enclosed AC condenser motor rated for continuous run.
• Power rating shall be 120 volts and 60 Hz.
• Two highly efficient blower wheels running on single motor for lower power consumption and decreased noise.
• Motor equipped with thermal cut-off fuse control.

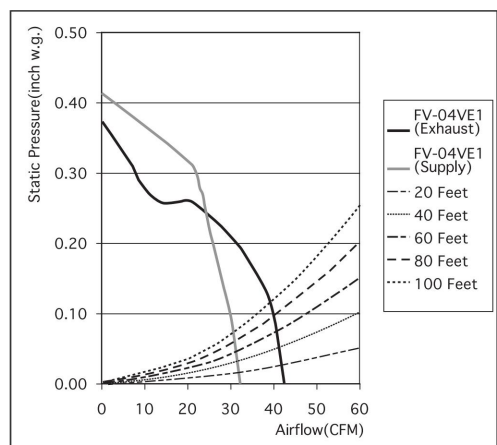
Housing
• Rust proof paint, galvanized steel body.
• Dual 4" intake and exhaust ducts.
• Built in backdraft damper on exhaust duct.
• Filters on supply and exhaust air extend the life of the ERV core.
• Expandable mounting bracket up to 16" on center.

Specifications: WhisperComfort FV-04VE1			
Air Volume Setting	40 CFM	20 CFM	10 CFM
Static Pressure in inches w. g.	0.1	0.1	0.1
Exhaust Air Volume (CFM)	40	20	10
Supply Air Volume (CFM)	30	20	10
Noise (sones)	0.8	-0.3	N/A
Power Consumption (watts)	23	21	17
Speed (RPM)	1479	1292	1095
Current (amps)	0.15	0.10	0.09
Power Rating (V/Hz)	120/60		
Apparent Sensible Effectiveness for Heating	66% at 30 CFM and 32°F (0°C)		
Total Recovery Efficiency for Cooling	36% at 29 CFM and 95°F (35°C)		



FV-04VE1 Optional Exterior Wall Cap and Elbow Accessories (see next page)

ERV Core Technology
• Indoor and outdoor air passes through Panasonic's capillary core technology. This process tempers supply air while transferring moisture and energy.
• Built in Frost Prevention Mode prevents the core from freezing. Frost Prevention Mode is free of interaction and operates without intervention.



For complete installation instructions visit us.panasonic.com/ventfans

Model	Quantity	Comments	Project:
			Location:
			Architect:
			Engineer:
			Contractor:
			Submitted by:
			Date:

Panasonic Eco Solutions North America
Eco Products Division
Two Riverfront Plaza
Newark, NJ 07102
us.panasonic.com/ventfans



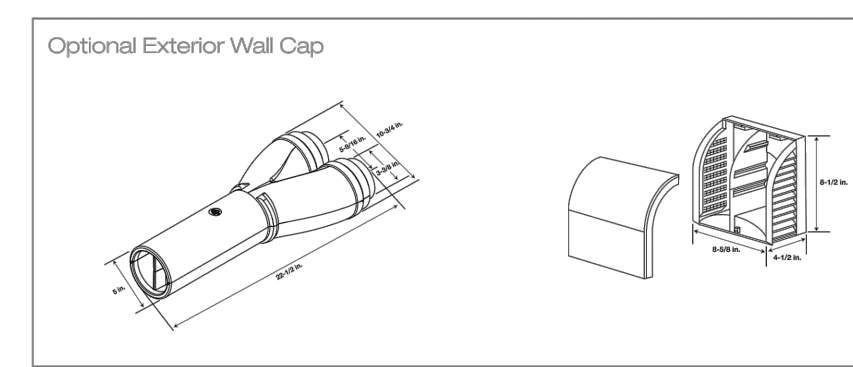
Panasonic

WhisperComfort Energy Recovery Ventilator

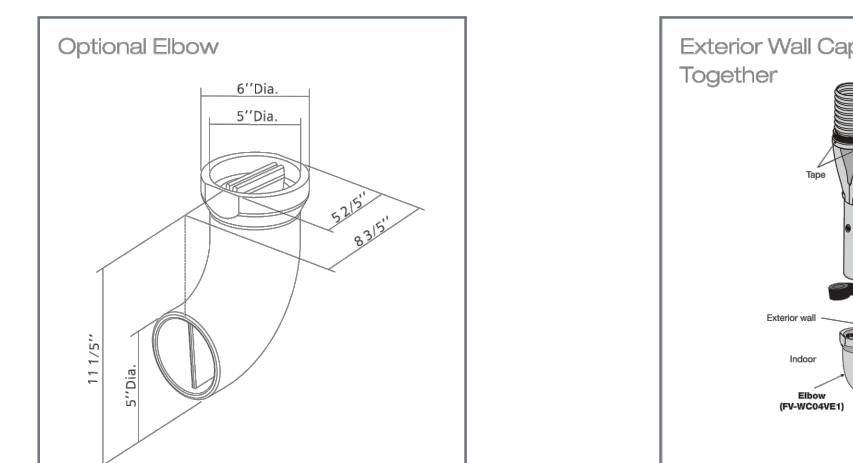
Specification Submittal Data / Panasonic Ventilation Fan

(Continued)

Optional Accessories



Exterior Wall Cap
FV-WC04VE1 polypropylene wall cap with styrofoam adaptor allows both exhaust from the right and supply (from the left) airflow through a 5.5"-5.75" hole in the building envelope. The dividers inside the bottom portion of the Y shape chamber and the new wall cap help prevent cross contamination.



Elbow
FV-EB04VE1 styrofoam elbow connects to the Y shaped adaptor of the exterior wall cap to help simplify wall installation. The elbow also features double chambers for exhaust and supply air to help prevent cross contamination.

Panasonic Eco Solutions North America
Eco Products Division
Two Riverfront Plaza
Newark, NJ 07102
us.panasonic.com/ventfans

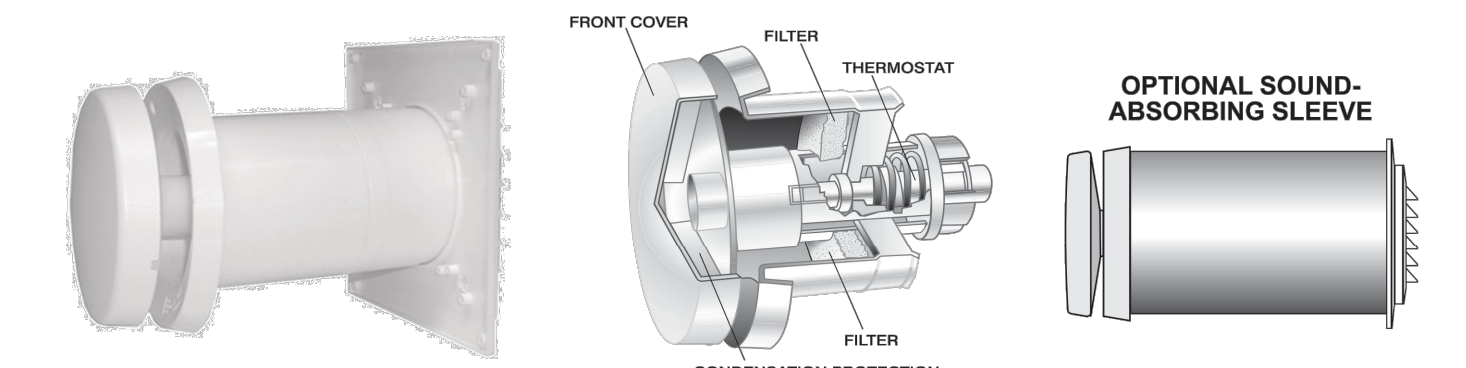


Panasonic

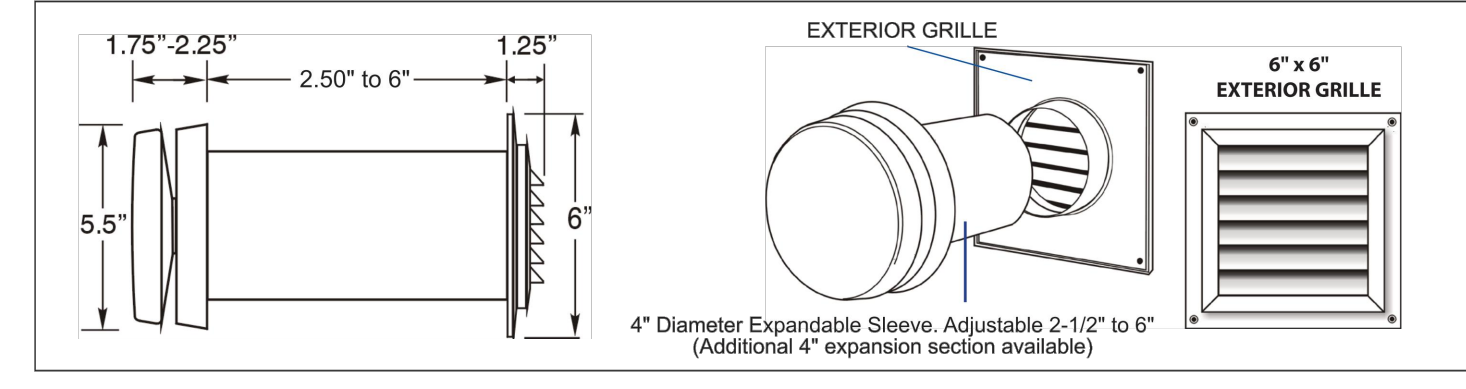
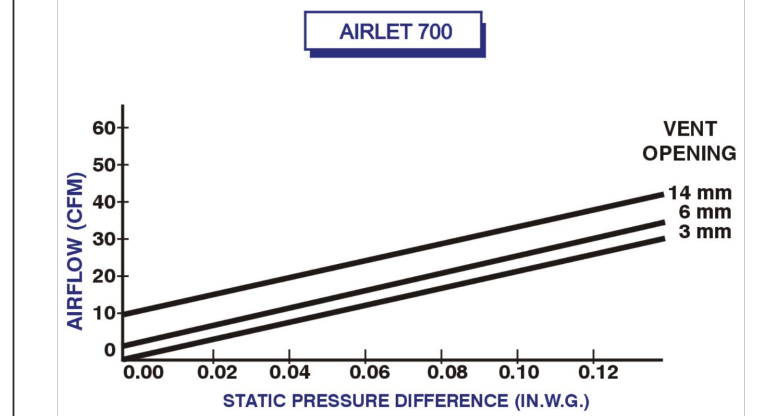


MAKE-UP AIR SOLUTIONS AIRLET™ 700 Temperature-Controlled Fresh Air Inlet

PRODUCT SPECIFICATIONS & TECHNICAL DATA



DESCRIPTION
The AIRLET™ 700 is a temperature-responsive air inlet that automatically adjusts incoming airflow according to outside temperatures. The integral thermally powered actuator requires no external power to operate the airtight opening. The insulated front cover incorporates a condensation-prevention design. The pre-calibrated opening on the AIRLET™ 700 starts to close once the outside air temperature drops to 50° F, and it is closed completely at 23° F. The temperature settings are field adjustable—simply turn the front cover. Each quarter rotation of the cover is equivalent to approximately 1mm, or 2°F. A minimum airflow setting can also be set, preventing the vent from ever closing completely. The AIRLET™ 700 includes a permanent, easily accessible washable filter, expandable wall sleeve, and exterior louvers. Options include a sound-absorbing wall sleeve for acoustically sensitive areas.



COMPLETE UNITS & ACCESSORIES			
P/N: 13 750	AIRLET™ 700 Complete (4"-6" Sleeve)		
P/N: 13 201	4" Sleeve Expansion Section	P/N: 13 711	Standard Replacement Filter
P/N: 13 552-12	Sound-Absorbing Wall Sleeve	P/N: 13 712	Pollen Filter (Optional)

WARRANTY
The entire unit is guaranteed for three (3) years, from date of shipment, against all manufacturing defects, provided the material has been installed and operated per manufacturer's instructions and under normal conditions. Warranty is limited to the repair or replacement of the material upon its return freight paid to our factory. This warranty is not transferable and is limited to the original end user.

American ALDES Ventilation Corporation • 4521 19th Street Court East, Suite 104 • Bradenton, FL 34203 - USA
941.351.3441 • 800.265.7749 • 941.351.3442 (fax) • info@americandaldes.com • www.aldes.us

1 ERV SUBMITTAL M6.01 SCALE: DETAIL

2 OUTSIDE AIR INLET - ALDES M6.01 SCALE: DETAIL

Commercial Ceiling Heater KDS Series

Model Code: KDS A 24 20
A: Series
B: A-Surface (Full recessed mount)
C: 20" (508 mm) x 24" (609 mm)
D: 27" (686 mm) x 48" (1219 mm)
E: 1 single phase - 3 three phase

4 heaters per floor

- Totally enclosed fan and lifetime-lubricated ball bearing motor
- Three stainless steel tubular heating elements with aluminum fins
- High-limit temperature control with automatic reset
- Fan delay purges heater of residual heat
- Installation recessed into T-bar ceiling for KDSB units
- Installation surface mounted for KDSA or KDSB units
- Recommended installation height: 8-12 ft. (2.4-3.6m)
- Standard color: white (-BW) (Almond optional)

The KDS Series Ceiling Heater
Designed for ceiling mount, this unit heater provides a high level of comfort. Driven by a powerful motor, the fan creates circulation by blowing downward warm air accumulation near ceilings.

Engineering Specifications
Contractor shall supply and install KDS Series electric heaters of the wattage and voltage as indicated on the plans.
Color: Standard: white. Optional: Almond, metallic silver, bronze, metallic charcoal, aluminum, semi-gloss black. Custom colors available upon request.
Finish: Standard: epoxy/polyester powder paint.
Voltage: 208V, 240V, 277V, 347V, 480V, 600V, 1 or 3-Phase.
Construction: Grill made of flat ribbon wire. High-limit temperature control with automatic reset.
Fan: Totally enclosed and lifetime-lubricated ball bearing motor. Fan delay purges heater of residual heat.
Heating elements: Three stainless steel tubular heating elements with aluminum fins.
Warranty: 1-year warranty against defects; 10-year warranty on the heating elements.

Commercial Ceiling Heater KDS Series

Ordering Information *Add suffix A for optional almond color

SURFACE MODEL KDSA	UPC	RECESS MODEL KDSB	UPC	SURFACE MODEL KDSB	UPC	VOLTS 1ph	WATTS
KDSA2420-1	30850	KDSB2420-1	30906			240	2000
KDSA2430-1	30852	KDSB2430-1	30908			240	3000
KDSA2440-1	30854	KDSB2440-1	30910			240	4000
KDSA2450-1	30856	KDSB2450-1	30912			240	5000
				KDSBL2475-1	30962	240	7500
				KDSBL24100-1	30964	240	10000
KDSA2020-1	30858	KDSRL2020-1	30914			208	2000
KDSA2030-1	30860	KDSRL2030-1	30916			208	3000
KDSA2040-1	30862	KDSRL2040-1	30918			208	4000
KDSA2050-1	30864	KDSRL2050-1	30920			208	5000
				KDSRL2075-1	30966	208	7500
				KDSRL20990-1	30968	208	9900
KDSA2720-1	30866	KDSRL2720-1	30922			277	2000
KDSA2730-1	30868	KDSRL2730-1	30924			277	3000
KDSA2740-1	30870	KDSRL2740-1	30926			277	4000
KDSA2750-1	30872	KDSRL2750-1	30928			277	5000
				KDSRL2775-1	30970	277	7500
				KDSRL27100-1	30972	277	10000
KDSA4820-1	30874	KDSRL4820-1	30930			480	2000
KDSA4830-1	30876	KDSRL4830-1	30932			480	3000
KDSA4840-1	30878	KDSRL4840-1	30934			480	4000
KDSA4850-1	30880	KDSRL4850-1	30936			480	5000
				KDSBL4875-1	30974	480	7500
				KDSBL48100-1	30976	480	10000
SURFACE MODEL KDSA	UPC	RECESS MODEL KDSB	UPC	SURFACE MODEL KDSB	UPC	VOLTS 3ph	WATTS
KDSA2420-3	30882	KDSB2420-3	30938			240	2000
KDSA2430-3	30884	KDSB2430-3	30940			240	3000
KDSA2440-3	30886	KDSB2440-3	30942			240	4000
KDSA2450-3	30888	KDSB2450-3	30944			240	5000
				KDSBL2475-3	30978	240	7500
				KDSBL24100-3	30980	240	10000
KDSA2020-3	30890	KDSRL2020-3	30946			208	2000
KDSA2030-3	30892	KDSRL2030-3	30948			208	3000
KDSA2040-3	30894	KDSRL2040-3	30950			208	4000
KDSA2050-3	30896	KDSRL2050-3	30952			208	5000
				KDSRL2075-3	30982	208	7500
				KDSRL20990-3	30984	208	9900
KDSA4820-3	30898	KDSRL4820-3	30954			480	2000
KDSA4830-3	30900	KDSRL4830-3	30956			480	3000
KDSA4840-3	30902	KDSRL4840-3	30958			480	4000
KDSA4850-3	30904	KDSRL4850-3	30960			480	5000
				KDSBL4875-3	30986	480	7500
				KDSBL48100-3	30988	480	10000

Commercial Ceiling Heater KDS Series

Dimensional Data

KDSA - Surface 2.5kW, 29 lbs (13.1 kg)
New Mounting Bracket

KDSB - Surface 7.5-10kW, 34 lbs (15.5 kg)
Check-out location

KDSB - Recessed 2.5kW, 31 lbs (14.1 kg)

Control Options

MODEL	DESCRIPTION	Options	DESCRIPTION
Product no-RT	Factory installed (Only) 24V relay with transformer	-A	Almond color
Product no-R	Factory installed 24V relay without transformer	-AE	Metallic Silver color (10% up-charge applies)
Product no-120	Factory installed 120V control circuit	-BZ	Bronze color (10% up-charge applies)
Product no-120	Factory installed summer fan 24V remote control + pilot light (switch not included)	-CM	Metallic Charcoal color (10% up-charge applies)
Product no-RCY24	Factory installed summer fan 240V remote control + pilot light (switch not included)	-AL	Aluminum color (10% up-charge applies)
Product no-RCY240	Factory installed summer fan 240V remote control + pilot light (switch not included)	-NL	Semi-Gloss Black (10% up-charge applies)
KDSB-T-BAR	Adapter for T-bar ceiling (KDSA/KDSB kits)	-BW	White
Product no-CV	Factory installed summer fan switch = pilot light		
Product no-DIS20	Factory installed disconnect switch DIS20 277V and less, double pole, 20 Amp		
Product no-DIS40	Factory installed disconnect switch DIS40 600V max, three pole, 40 Amp		
Product no-DIS60	Factory installed disconnect switch DIS60 600V, three pole, 60 Amp		
KDS-T-AV	Built in tamper proof thermostat kit		
Product #-T-AV	Factory installed built-in tamper-proof thermostat		

3 CEILING HEATER - CH-1 M6.01 SCALE: DETAIL



MFA Consulting Engineers
3007 S.E. Ash St.
Portland, OR 97214
PH: (503) 234-0548
FAX: (503) 234-0677
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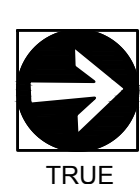
REVISION	DATE	REASON FOR ISSUE

**MECHANICAL
DETAILS**

PERMIT SET

DATE: 08/29/2022 PROJECT NUMBER: 203970

SHEET NUMBER: M6.01



WhisperGreen Select

Specification Submittal Data / Panasonic Ventilation Fan

Description
Customizable Ventilation Fan shall be low noise ceiling mount rated for continuous run. Fan shall be ENERGY STAR® rated and certified by the Home Ventilating Institute (HVI). Evaluated by Underwriters Laboratories and conform to both UL and cUL safety standards.

- Motor/Blower**
- Enclosed DC brushless motor technology rated for continuous run.
 - Fan ventilation rates shall be manually adjustable for 50-110 CFM.
 - Power rating shall be 120 volts and 60 Hz.
 - Fan shall be UL listed for tub/shower enclosure when used with a GFCI protected circuit and used in insulated ceiling (TYPE I.C.).
 - Fan equipped with a thermal cutoff fuse.
 - Removable, permanently lubricated, plug-in motor.

- Housing**
- Rust proof epoxy and polyester resin coating, 26 gauge galvanized steel body.
 - Integrated duct 4" or 6" diameter duct adapter.
 - Built-in metal flange provides blocking for penetrations through drywall as an Air Barrier, and assists with the decrease in leakage in the Building Envelope during blower door testing.
 - Built-in backdraft damper.
 - Articulating and expandable installation bracket up to 24".

- Grilles**
- Attractive design using Poly Pro material.
 - Attaches directly to housing with tension springs.
 - Includes a motion sensor cap for use as a cover when the motion sensor Plug 'N Play™ module has not been selected.

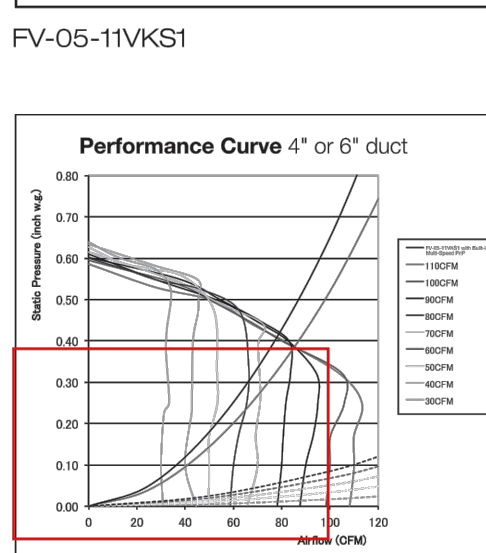
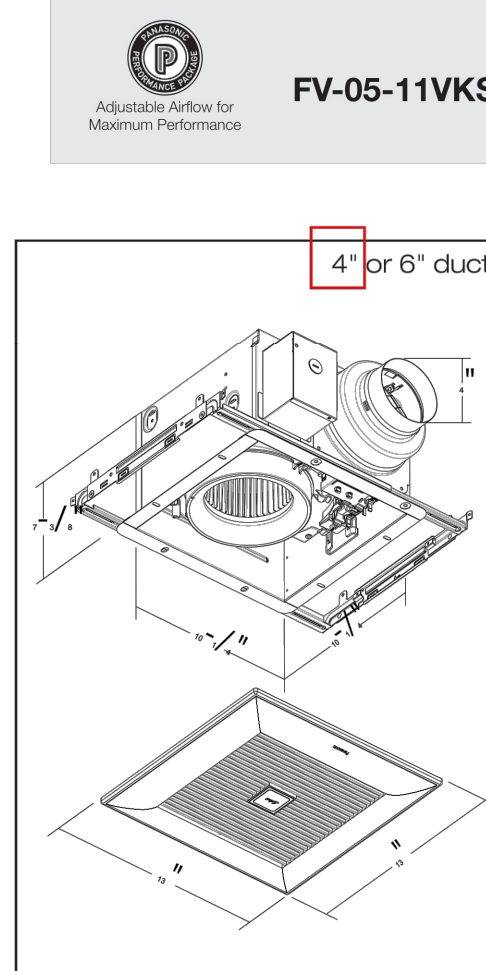
- Warranty**
- ALL Parts: 3 Years from original purchase date.
 - DC Motor: 5 Years from original purchase date.

Architectural Specifications:
Customizable Ventilation Fan shall be ceiling mount, ENERGY STAR® rated type with multi-speed control (0, 30-100 CFM, in 10 CFM increments) that shall be built-in with a high/low adjustable delay timer and activated by a wall switch, Motion Sensor Plug 'N Play™ module or Condensation Sensor Plug 'N Play™ module. Features a built-in speed selector. Select from 50 to 110 CFM and no more than 0.33 amps as certified by the Home Ventilating Institute (HVI) at 0.1 w.g. with no less than 53/82/113 CFM and no more than $0.30/4.0/8.0$ sones at 25 w.g. Power Consumption shall be no greater than 3.25/5.9/8 watts at 0.1 w.g. and 6.5/10.2/16.1 watts at 0.25 w.g. ENERGY STAR® rated with efficiency of no less than 16.1/18.3/11.5 CFM/Watt at 0.1 w.g. and then 8.1/8.4/7.2 CFM/Watt at 0.25 w.g. The motor shall be enclosed with brushless DC motor engineered to run continuously. DC motor speed shall automatically increase when the fan senses static pressure to maintain selected CFM. Power rating shall be 120V/60Hz. Duct diameter shall be no less than 4", inclusive of an integrated 4" or 6" duct adapter. Plug 'N Play™ module provides up to two additional features. Select from Condensation Sensor, LED Night Light and Motion Sensor. Fan can be used to comply with ASHRAE 62.2, LEED, ENERGY STAR®, IAP, EarthCraft, California Title-24 and WA Ventilation Code.

- DC Motor Technology**
- When fan senses static pressure, its speed is automatically increased to ensure that the desired CFM is not compromised, which allows the fan to perform as rated.

For complete installation instructions visit us.panasonic.com/ventfans

Model	Quantity	Comments	Project:
			Location:
			Architect:
			Engineer:
			Contractor:
			Submitted by:
			Date:



Fan Specifications	WhisperGreen Select's FV-05-11VK51
Static Pressure in Inches w.g.	0.1 0.25 0.1 0.25 0.1 0.25 0.1 0.25 0.1 0.25 0.1 0.25 0.1 0.25 0.1 0.25 0.1 0.25 0.1 0.25
Air Volume (CFM)	110 113 100 106 90 85 70 71 60 56 40 33 42 43 30 31
Power Consumption (watts)	0.53 1.8 0.37 0.7 0.8 0.34 0.83 1.4 0.31 0.53 0.83 0.31 0.53 0.83 0.31 0.53 0.83 0.31 0.53
Energy Efficiency (CFM/Watt)	115 72 13.6 7.9 14.5 8.3 15.3 8.4 17.2 8.7 11.5 8.8 15.1 8.1 16.3 8.7 14.2 7.6
Sones (HVI)	0.01 0.09 0.09 0.10 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12 0.12
MAX. Current (amps)	0.27
Power Rating (V/Hz)	120/60
ENERGY STAR rated	Yes

0.25w-Installed Performance

WhisperGreen Select

Plug 'N Play™ Modules

Plug 'N Play™ modules provide up to two additional features (multi-speed is already built-in to FV-05-11VK51). Select from Motion Sensor, Condensation Sensor and LED Night Light.

FV-VS15VK1: Multi-Speed with Time Delay - N/A for this Fan, already built-in.
Allows you to select the proper CFM settings to satisfy ASHRAE 62.2 continuous ventilation requirements. The fan runs continuously at a pre-set lower level (0, 100 CFM, in 10 CFM increments), then elevates to a maximum level of operation (50, 110 CFM) when the wall switch is turned on, or when the motion sensor or Condensation Sensor module is activated. A High/Low delay timer returns the fan to the pre-set CFM level after a period of time set by the user.

FV-MSVK1: Motion Sensor
Automatically activates when someone enters the room. Once the settings have been applied, the fan becomes truly automatic. This module also activates a 20 minute delay off timer for the fan.

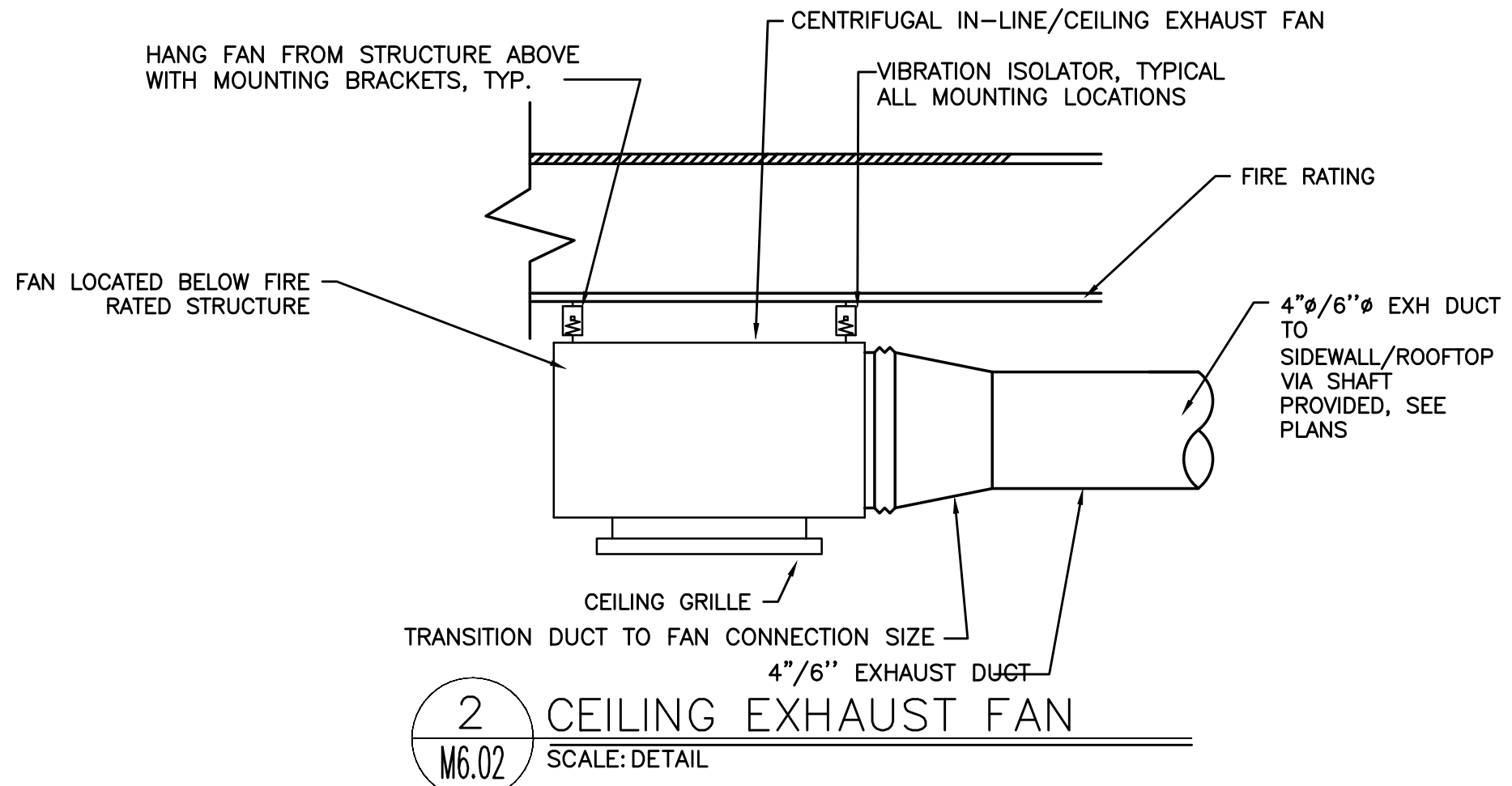
FV-CSVK1: Condensation Sensor
Helps control bathroom condensation to prevent mold and mildew. Sensor technology detects relative humidity and temperature to anticipate dew point, automatically turning the fan on to control humidity. Built-in Relative Humidity (RH) sensitivity adjustment enables fine tuning for moist conditions and for satisfying CalGreen requirements. When the condensation sensor is used in conjunction with multi-speed functionality, the fan will kick-up to high speed when the condensation sensor detects moisture in the room. This module also activates a 20 minute delay off timer for the fan.

FV-NLVK1: LED Night Light
A photocell automatically turns on the 1 watt LED night light when darkness is sensed in the room. High/Low brightness switch enables you to fine tune the photocell to work in conjunction with the darkness level of your bathroom. This module also activates an automatic 20 minute delay off timer for the fan.

Panasonic Eco Solutions Company of North America
Eco Products Division
Two Riverfront Plaza
Newark, NJ 07102
us.panasonic.com/ventfans



Panasonic



2
M6.02
SCALE: DETAIL

RV20 Low-Profile Roof Vent

Technical Data Sheet

- FEATURES & BENEFITS**
- Patented design eliminates leaky joints and maximizes water protection with one-piece molded hood and over-sized flange.
 - Aesthetically-pleasing, low-profile styling.
 - Molded-in screen to prevent bird and rodent infiltration.
 - Long lasting durability with UV-protected, impact-resistant polymer resin.
 - Compatible with 4, 5 or 6-inch ducting with included RV456 easy snap-in adapter.
 - Simple intake/exhaust conversion via removable damper.
 - Quick and easy installation with installer-friendly packaging (vent/adaptor bagged together).
 - For dryer applications use 'no screen' (NS) model.

PRODUCT DIMENSIONS
HOOD SIZE: H: 6.5" / W: 7" / D: 4.9"

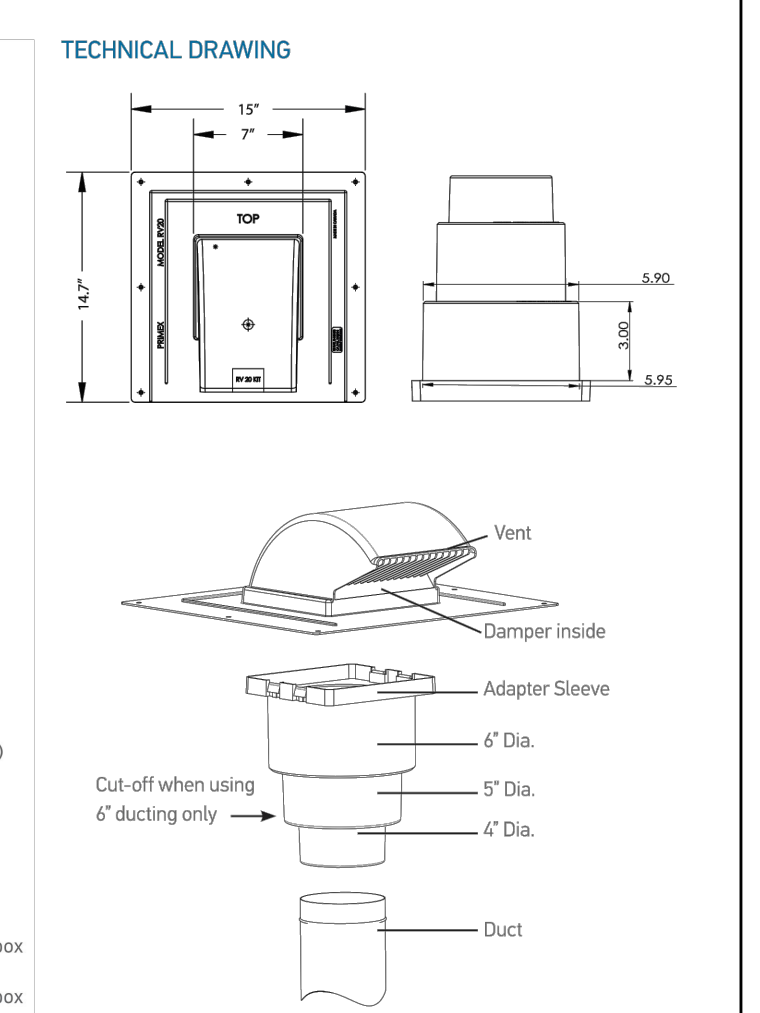
- COLOURS**
- Black (25)
 - Light Grey (31)
 - Dark Grey (28)
 - Tan (45)
 - Dark Brown (68)

- APPLICATIONS**
- Dryer Venting
 - Bathroom Venting
 - Range Venting
 - Heat Recovery Venting (HRV)
 - Intake

PART NUMBER/SIZING

Part #	Size	Free Area	Description	Pkg
RV20KIT	4", 5", 6"	20.9 sq. in.	With screen, damper, RV456 adapter	10/box
RV20KITNS*	4", 5", 6"	21.4 sq. in.	W/o screen, damper, RV456 adapter	10/box

CONTACT US FOR MORE INFORMATION:
1.604.881.7875 | info@primexvents.com
1116



1 RESTROOM FAN

M6.02 SCALE: DETAIL

PRIMEX HVAC VENTING Product Specification Sheet WC Series Intake and Exhaust Wall Cap Vents

1. PRODUCT SUMMARY

The Primex Wall Cap Series (WC) is ideal for exhaust and intake applications. This includes the through-wall exhaust of dryers, bathroom kitchen fans and stove vents, and the intake for furnaces and fresh air make-up. This rainscreen-compatible series comes in sizes ranging from 3-8 inches and in multiple colours.



2. FEATURES & BENEFITS

- Compatible with rainscreen applications via extended base, compensating for cavity between sheathing and cladding.
- Patented design eliminates leaky joints while maximizing water protection with one-piece molded base and built-in drip edge.
- Integrity of the building envelope is maintained via a removable hood for simple cleaning or replacement.
- Suitable for intake and exhaust applications.
- Over-sized flange ensures watertight installation.
- Made with UV-protected durable polymer resin.
- Highly resistant to mechanical impact including a built-in bird screen.
- Quick and easy installation.
- * For dryer applications we recommend the no screen 'NS' model.



- 3. COLOURS**
- Snow White (01)
 - Light Grey (31)
 - Taupe (23)
 - Tan (45)
 - Black (25)
 - Dark Brown (68)
 - Dark Grey (28)

FOR MORE INFORMATION CONTACT:
20160 92A Avenue Langley BC V1M 3A4 Canada
1.877.861.7875 | info@primexvents.com | primexvents.com



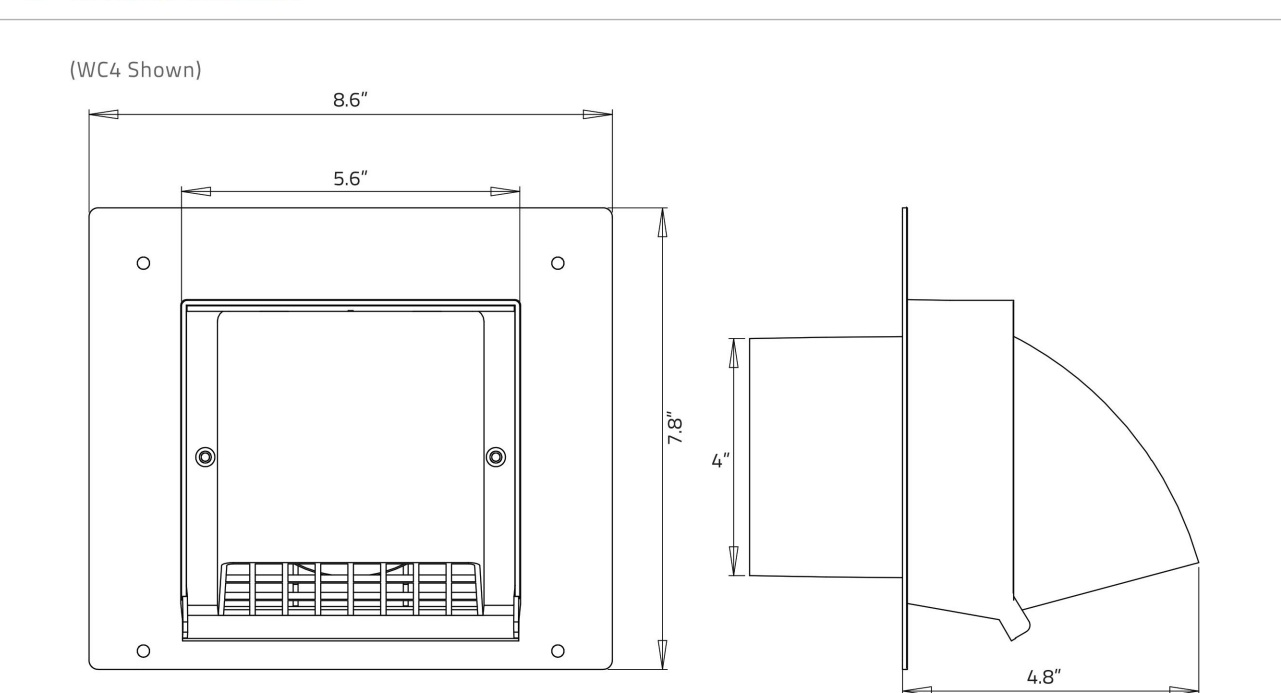
PRIMEX HVAC VENTING Product Specification Sheet WC Series Intake and Exhaust Vents

4. SIZING/PART NUMBER

INTAKE AND EXHAUST WALL CAP VENTS					
W/O BIRD SCREEN	W/O BIRD SCREEN	COLLAR SIZE	FREE AREA	DESCRIPTION	PKG
WC3	WC3NS	3"	7.7 sq. in.	For use with 3" dia. ducting	25/box
WC4	WC4NS	4"	9.5 sq. in.	For use with 4" dia. ducting	25/box
WC5	WC5NS	5"	19.6 sq. in.	For use with 5" dia. ducting	10/box
WC6	WC6NS	6"	28.3 sq. in.	For use with 6" dia. ducting	10/box
WC7	WC7NS	7"	38.5 sq. in.	For use with 7" dia. ducting	2/box
WC8	WC8NS	8"	46.8 sq. in.	For use with 8" dia. ducting	2/box

RANGE HOOD VENTS					
PART #	DUCT BOOT	FREE AREA	DESCRIPTION	PKG	
WC310	3" x 10"	30.2 sq. in.	Wall Cap Vent: use with 3" x 10" register boot or slab duct	18/pkg	
WC310K	3.25" x 10"	30.2 sq. in.	Range Hood Vent: use with 3.25" x 10" kitchen transition boot or slab duct	18/pkg	

5. TECHNICAL DRAWINGS



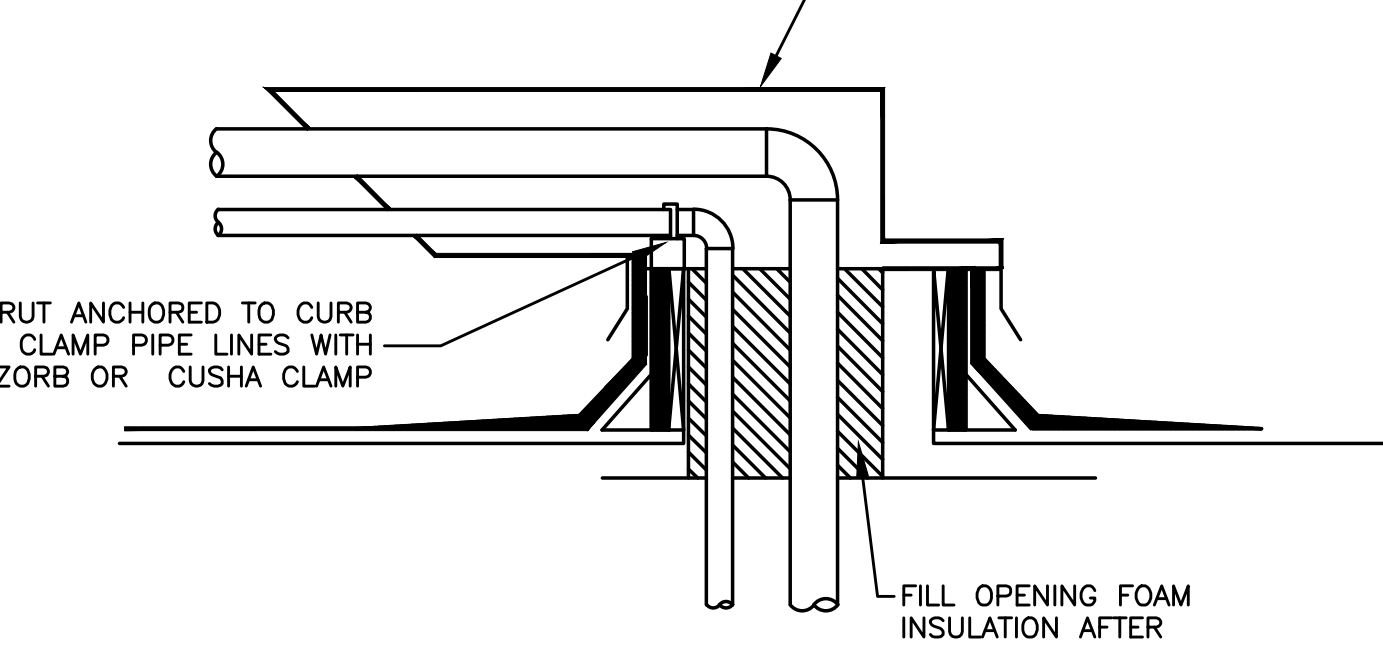
FOR MORE INFORMATION CONTACT:
20160 92A Avenue Langley BC V1M 3A4 Canada
1.877.861.7875 | info@primexvents.com | primexvents.com



4 LOW PROFILE ROOF VENT

M6.02 DETAIL

20 GAL. GALVANIZED SHEET METAL HOOD TO BE INSTALLED AFTER PIPE LINES ARE SET.

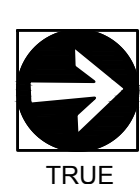


5 REFRIGERANT ROOF PENETRATIONS

M6.02 DETAIL

3 SIDEWALL EXHAUST TERMINATION

M6.02 NOT TO SCALE



TRUE



MEFA Consulting Engineers
2007 S.E. Ash St.
Portland, OR 97214
PHN: (503) 234-0548
FAX: (503) 234-0677
INC. WWW.MEFA-ENG.COM
CONTACT: Mark Denyer

MERIDIAN GARDENS
11250 SE DIVISION STREET
PORTLAND, OREGON 97266
CENTRAL CITY CONCERN

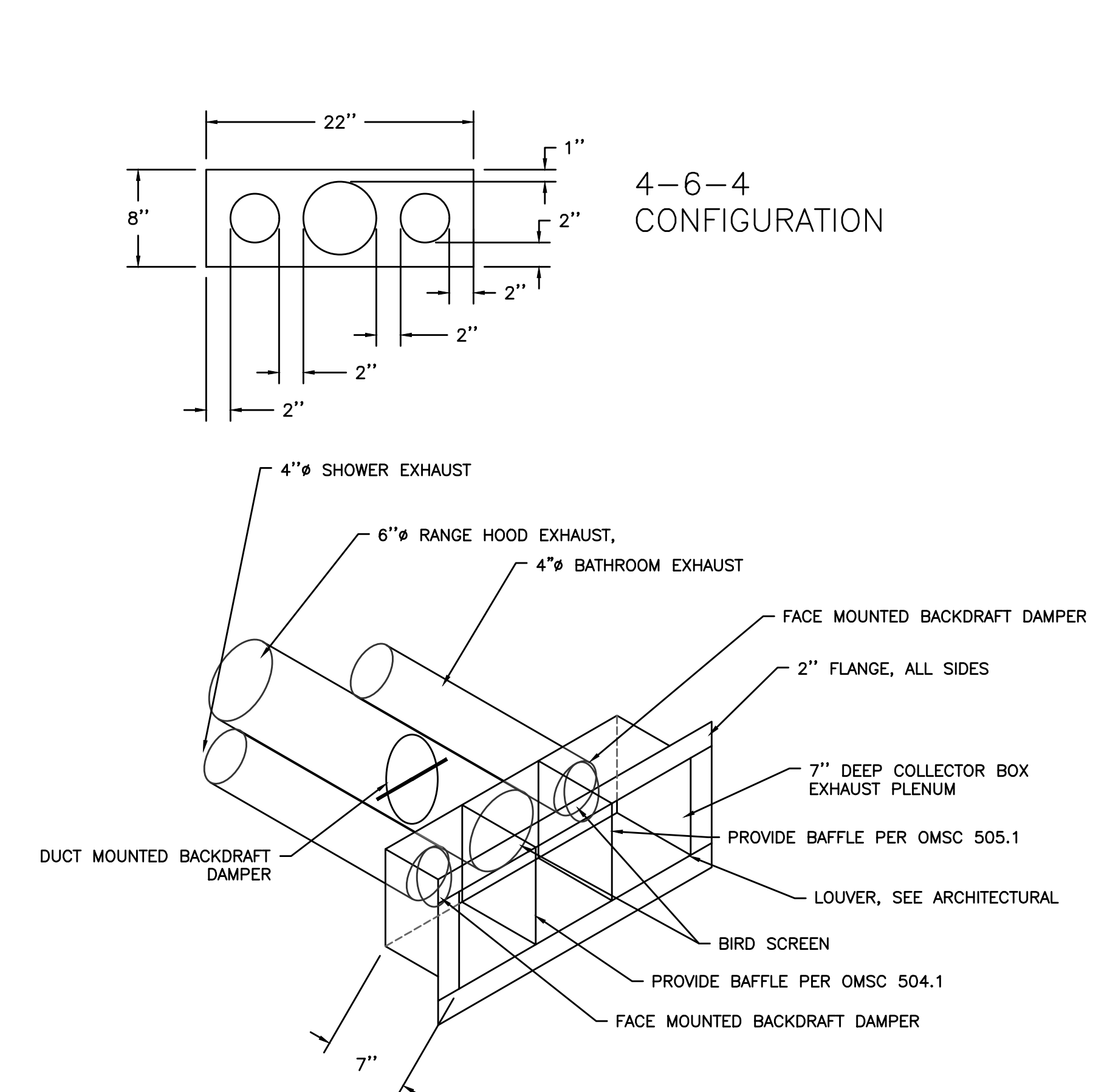
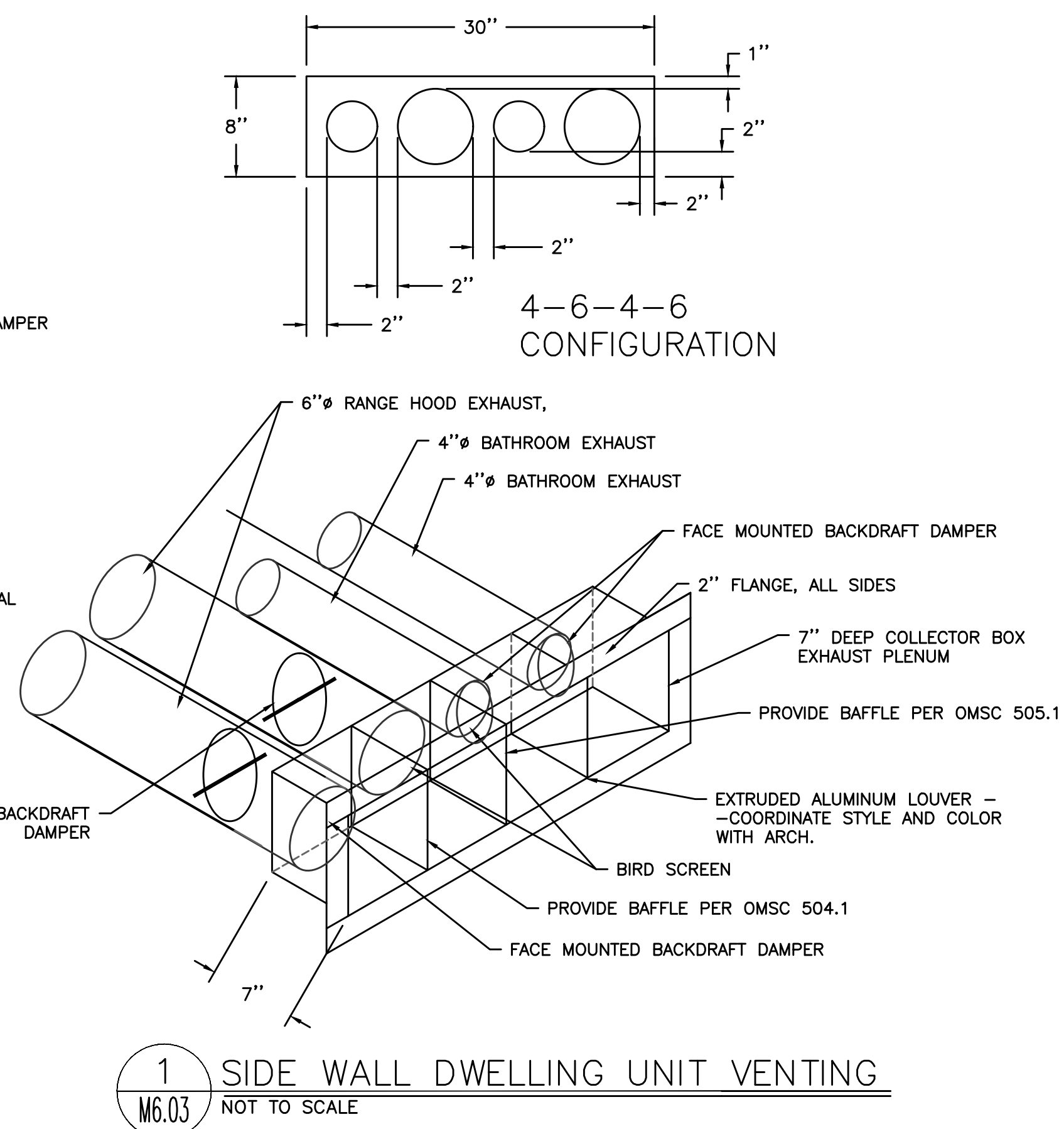
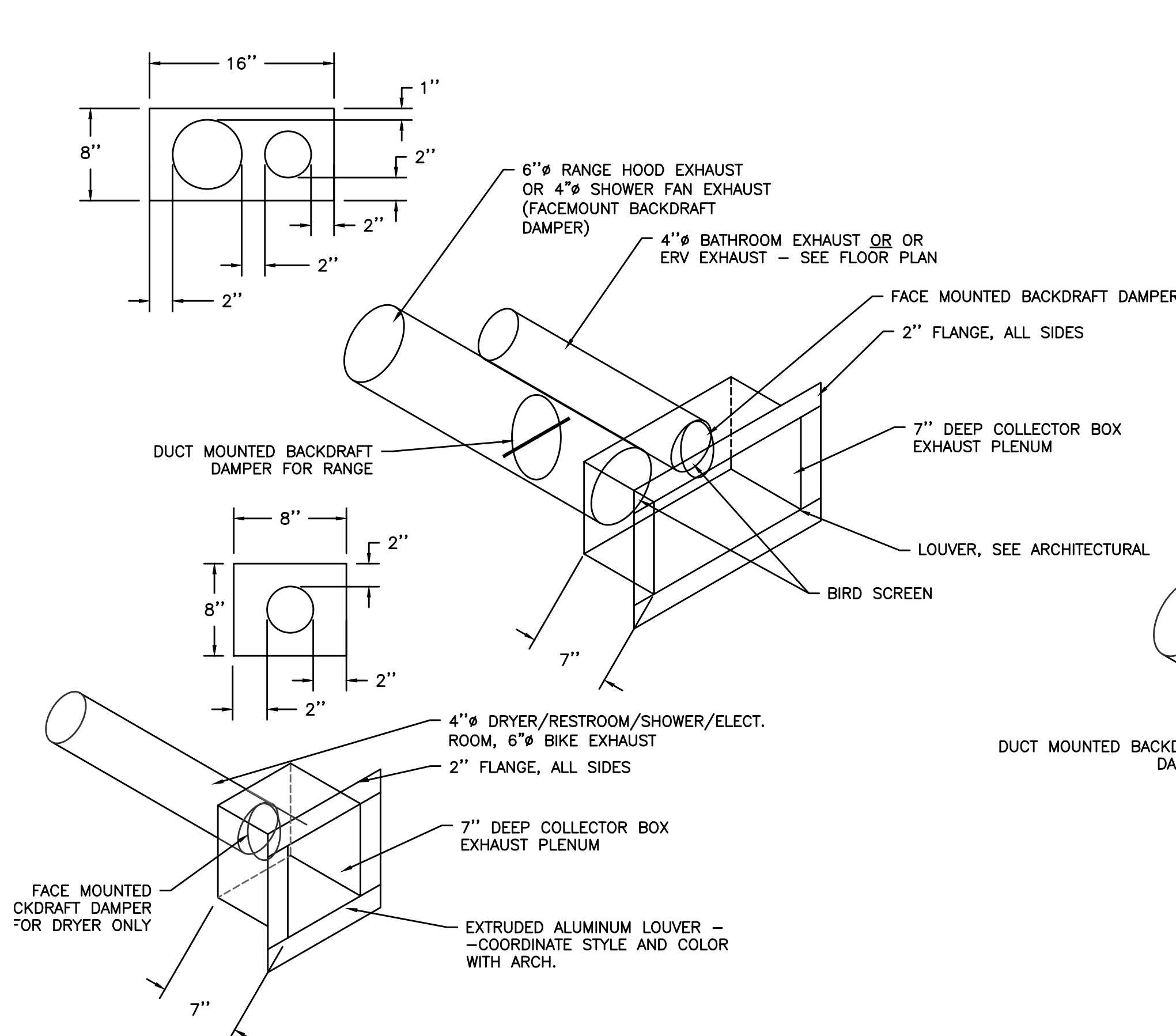
REVISION	DATE	REASON FOR ISSUE

MECHANICAL DETAILS

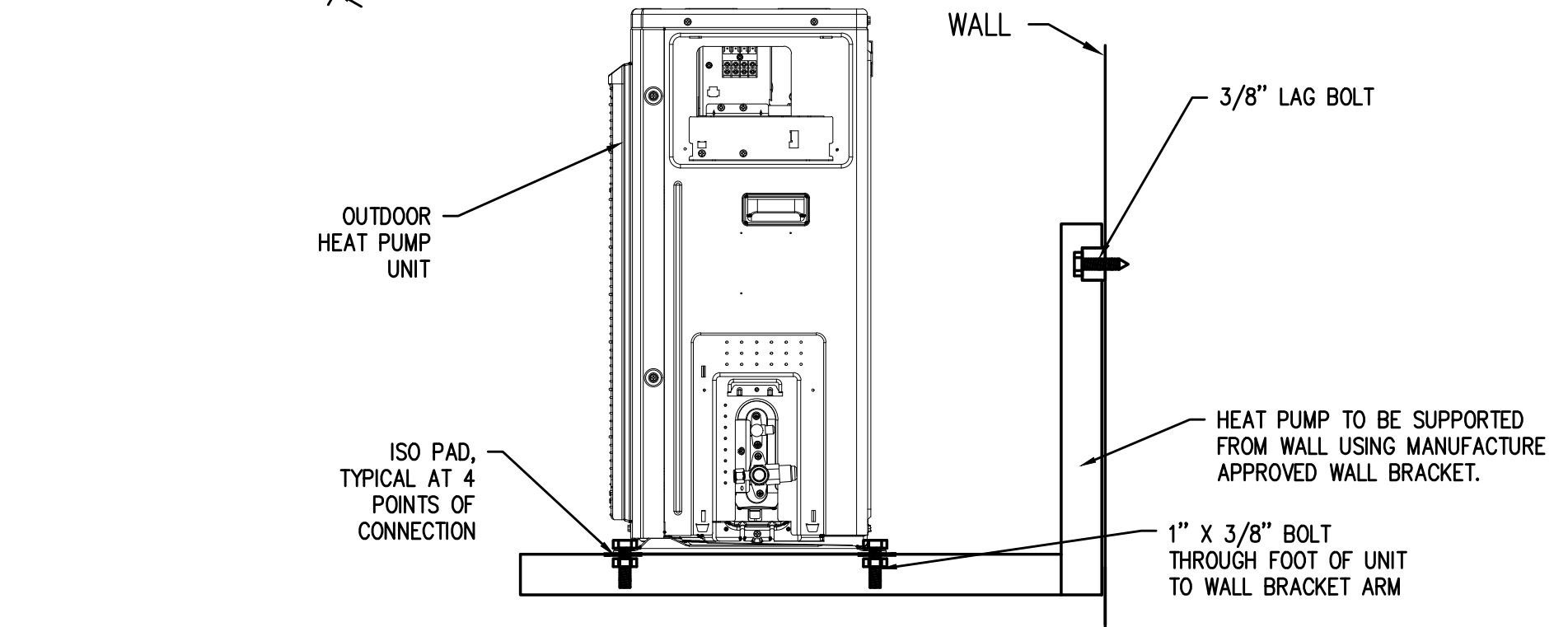
PERMIT SET

DATE: 08/29/2022 PROJECT NUMBER: 203970

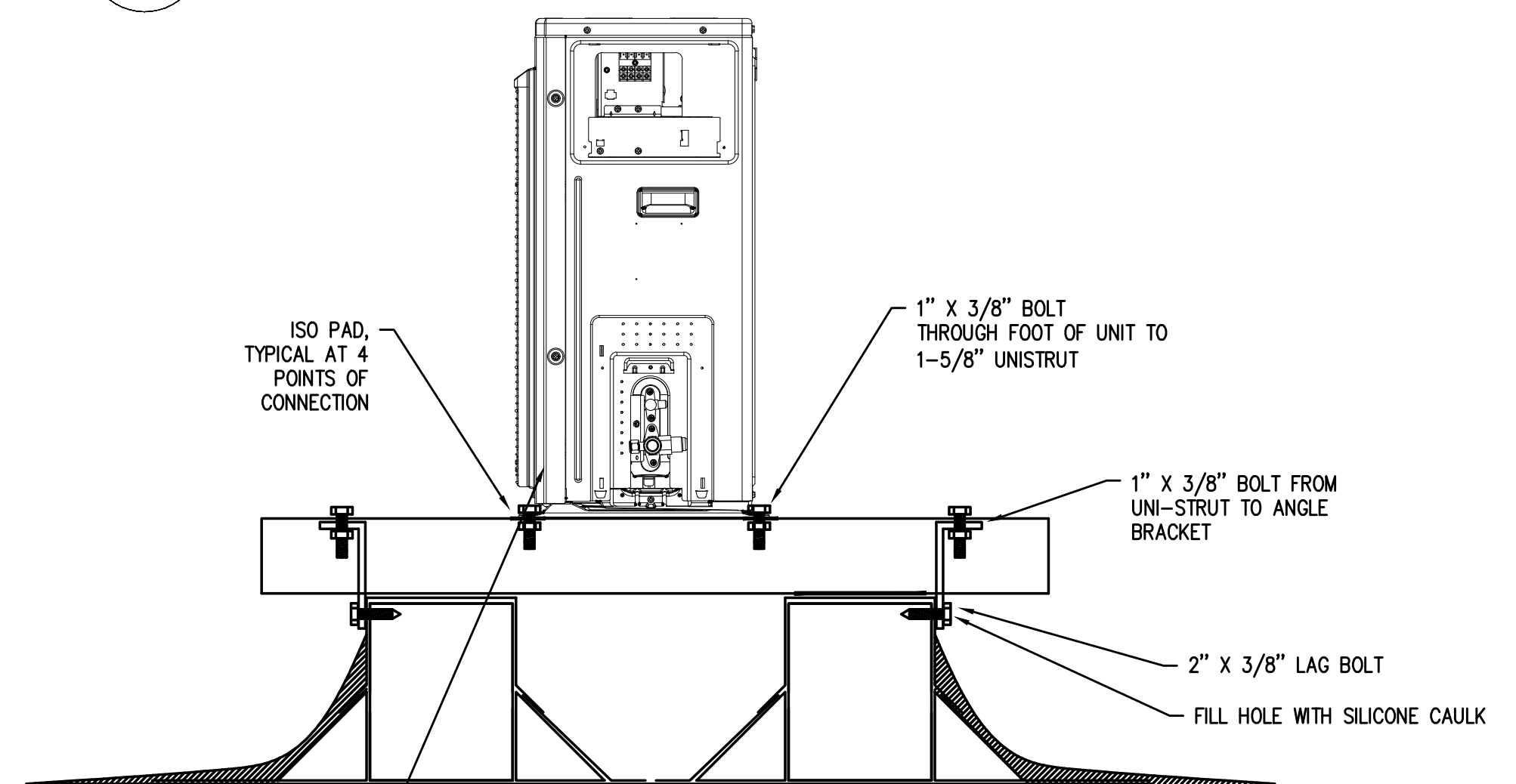
SHEET NUMBER: M6.02



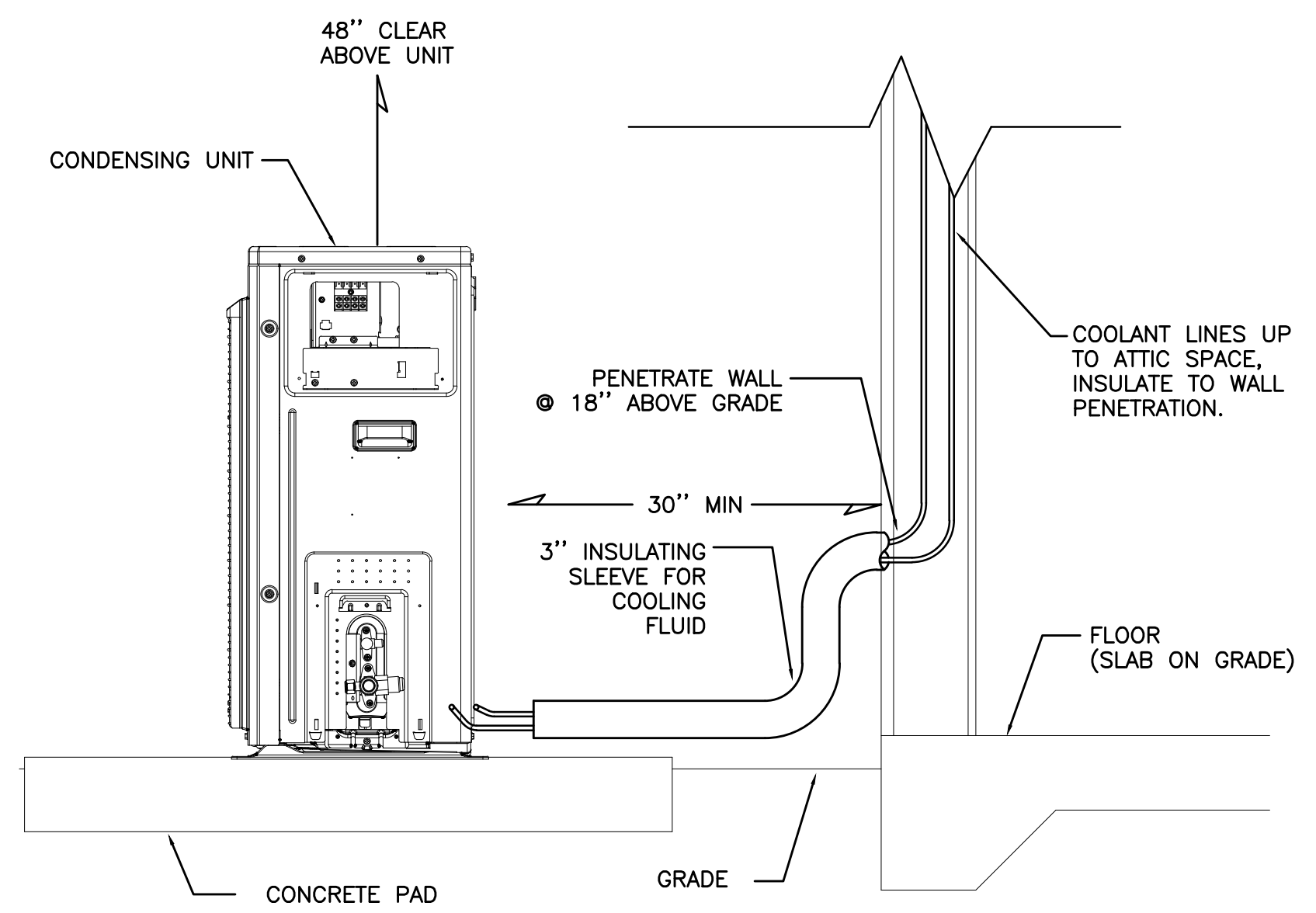
1 SIDE WALL DWELLING UNIT VENTING
M6.03 NOT TO SCALE



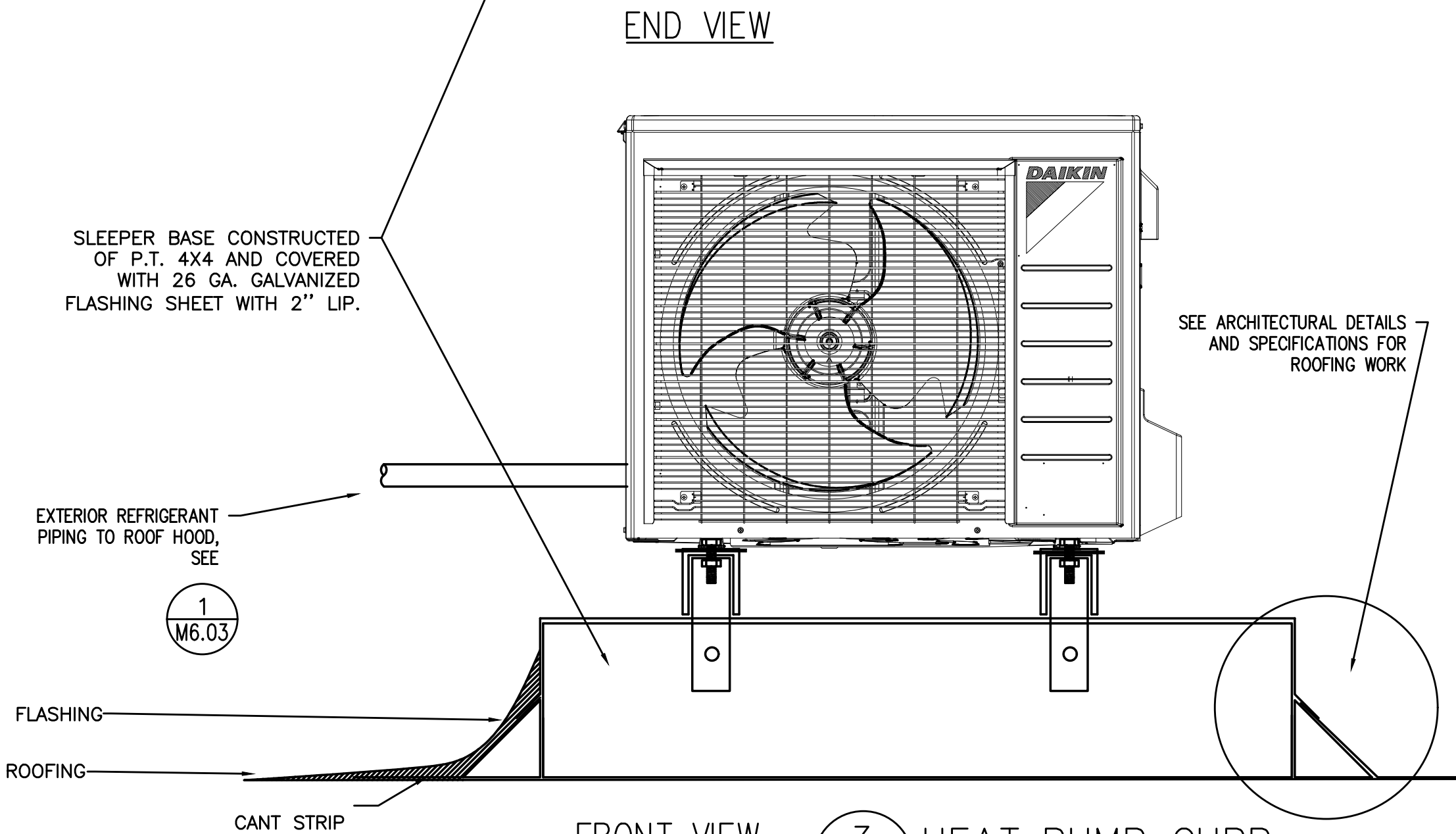
2 HEAT PUMP WALL BRACKET
M6.03 SCALE: DETAIL



END VIEW



5 HEAT PUMP PAD MOUNT
M6.03 SCALE: DETAIL



FRONT VIEW

3 HEAT PUMP CURB
M6.03 DETAIL

Job Name/Location: _____ Tag No.: _____
 Date: _____ For: File Resubmit
 PO No.: _____ Approval Other
 Architect: GC: _____
 Engr: Mech: _____
 Rep: _____
 (Company) (Project Manager)

PREMTB100
 LG Standard III Wired Remote Controller

Electrical:
 Power Supply: 12VDC Power From Indoor Unit

Operating Environment:
 Operating Temperature: 32°F ~ 104°F (0°C ~ 40°C)
 Storage Temperature: -4°F ~ +147°F (-20°C ~ +60°C)
 Humidity: 0% ~ 90% (RH)

Unit Data:
 Dimensions: 4-3/4" W x 4-3/4" H x 5/8" D
 Min Number of Indoor Units (per controller): 16
 Maximum Number of Controllers (per Indoor Unit): 2

Standard Features:
 • 4.5/16" Color Display • Time Display
 • Touch Button • Operation On / Off Status LED

Basic Functions:
 • Room Temperature and Humidity Sensing and Display
 • Operation - On / Off
 • Mode - Auto / Cool / Dry / Heat / Fan Only
 • Ventilation Mode (For Ventilator Units)
 • Occupied Cooling and Heating Temperature Setpoint
 • Unoccupied Cooling and Heating Setback Temperature Setpoint
 • Fan Speed - Auto / Low / Med / High
 • Discharge Vanes - Auto / Swing / Fixed
 • Controller Lock Function
 • Static Pressure Installer Setting
 • Error Code Display During Unit or System Malfunction
 • Auto Restart on Power Failure
 • Manual Central Control Addressing

Advanced Functions:
 • Time of Day Scheduling, Five (5) Events per Day with Control of Occupied / Unoccupied, On / Off, Mode, Setpoints, and Fan Speed
 • Two Setpoint Autochanger (For Heat Recovery Systems)
 • Minimum Difference between Setpoints (0 ~ 10°) Adjustable Dead-band
 • Home Leave Function for Temporary Unoccupied Status
 • Sub-function Setting
 • Comfort Level Display
 • External Equipment Control via One (1) Digital Output
 • Filter Sign Check and Initialization
 • Time Limit Control (30 minutes ~ 540 minutes, 30 minute units)
 • AP Mode Setting for LG Wi-Fi Modem Installation

Optional Accessories (Sold Separately):
 PZCWR1 - 33-foot Extension Cable Assembly
 PZCWRG3 - Group Control Cable Kit

Must follow installation instructions in the applicable LG installation manual.
 For central product development, LG reserves the right to change specifications without notice.
 © LG Electronics U.S.A., Inc. Engineering ID No. All rights reserved. "LG Wi-Fi Cloud" is a registered trademark of LG Corp. www.lg.com

Connectivity:
 LG Communications 1 Channel for V-Net, Wi-Fi with ThinQ2 Capability

Communications Cable Specifications (V-Net):
 Type: Three (3) Conductor (Red: 12V, Yellow: Signal, Black: GND)
 Size: Stranded, Twisted, Unshielded
 Length: AWG 22-3 Up to 164 feet

Controller Screen and Buttons:

Dimensions:

Notes:
 1. Available functions / features may differ based on connected system.
 2. Communication cable can be extended to a maximum of 164 feet between controller and indoor unit, by using field-supplied wire or the Wired Remote Group Control Cable Assembly (PZCWRG3) or Wired Remote Extension Cable (PZCWR1), maximum of four (4).
 3. Must follow installation instructions in the applicable LG installation manual.
 4. Centralized controller (AC Smart / ACP Series) and Premium PDI are required for energy target display function.

Optional Accessories (Sold Separately):
 PZCWR1 - 33-foot Extension Cable Assembly
 PZCWRG3 - Group Control Cable Kit

58_Std_III_WiredRemoteController_PREMTB100_2022_03_18_085430 Page 1 of 3

4 SPLIT SYSTEM THERMOSTAT
M6.03 SCALE: DETAIL



MFA Consulting Engineers
 2007 S.E. Ash St.
 Portland, OR 97214
 PHN: (503) 234-0548
 FAX: (503) 234-0677
 WWW.MFA-ENG.COM
 CONTACT: Mark Denyer

MERIDIAN GARDENS
 11250 SE DIVISION STREET
 PORTLAND, OREGON 97266
 CENTRAL CITY CONCERN

REVISION	DATE	REASON FOR ISSUE

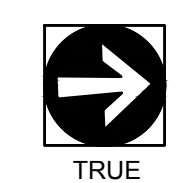
MECHANICAL
DETAILS

PERMIT SET

DATE: 08/29/2022 PROJECT NUMBER: 203970

SHEET NUMBER

M6.03



System No. W-L-7018

ANSI/UL1479 (ASTM E814)	CANULC S115
F Rating — 2 Hr	F Rating — 2 Hr
T Rating — 1/2 Hr	FT Rating — 1-1/2 Hr
	FH Rating — 2 Hr
	FTH Rating — 1-1/2 Hr

SECTION A-A

1. Wall Assembly — The 2 hr fire-rated gypsum wallboard/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300, U400, V400 or W400 Series Wall and Partition Designs in the UL Fire Resistance Directory and shall include the following construction features:
 A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 2-1/2 in. (64 mm) wide and spaced max 24 in. (610 mm) OC.
 B. Gypsum Board* — Two layers of nom 5/8 in. (16 mm) thick gypsum wallboard as specified in the individual Wall and Partition Design No. Max diam of opening is 9 in. (229 mm).
 2. Metallic Sleeve — Cylindrical sleeve fabricated from min 0.016 in. (0.40 mm) thick (No. 28 gauge) galv steel sheet steel and having a min 2 in. (51 mm) lap along the longitudinal seam. Length of sleeve to be 18 in. (3 mm) less than thickness of wall. Sleeve to be installed by rolling the sheet metal to a diam smaller than the through opening, inserting the coil through the openings and releasing the coil to let uncoil against the circular cutouts in the gypsum wallboard layers.

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Hilti Firestop Systems

Page: 1 of 2

System No. W-L-7018

3. Steel Duct — Nom 6 in. (152 mm) diam (or smaller) No. 28 gauge (or heavier) galv steel duct to be installed concentrically within the firestop system. Duct to be rigidly supported on both sides of the wall assembly.
 4. Pipe Covering* — Nom 1 in. (25 mm) thick hollow cylindrical heavy density (3.5 pcf or 56 kg/m³) glass fiber units jacketed on the outside with an all service jacket. Longitudinal joints sealed with metal fasteners or factory-applied self-sealing lap tape. Transverse joints secured with metal fasteners or wall but tape supplied with the product. The annular space between the insulated pipe and the steel sleeve shall be min 0 in. (point contact) to max 1 in. (25 mm).
 See Pipe Equipment Covering — Materials — (BRGU) Category in the Building Materials Directory for names of manufacturers. Any pipe covering material meeting the above specifications and bearing the UL Classification Marking with a Flame Spread Index of 25 or less and a Smoke Developed Index of 50 or less may be used.
 5. Fill, Void or Cavity Material* — Sealant — Min 1-1/4 in. (32 mm) depth of sealant applied within the annulus, flush with each surface of the wall assembly. At the point contact location between insulated pipe and wall, a min 1/2 in. (13 mm) diam bead of sealant shall be applied on both surfaces of wall, lapping 1/4 in. (6 mm) beyond the periphery of the opening.
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC. — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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Hilti Firestop Systems

Page: 2 of 2

System No. F-C-7057

ANSI/UL1479 (ASTM E814)	CANULC S115
F Rating — 1 Hr	F Rating — 1 Hr
T Rating — 1 Hr	FT Rating — 1 Hr
	FH Rating — 1 Hr
	FTH Rating — 1 Hr

SECTION A-A

1. Floor-Ceiling Assembly — The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction details of the floor-ceiling assembly are summarized below:
 A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Max area of floor opening is 150 in 2 (0.098 m²) with a max 1.5 in. (38 mm) annular space between duct and framing members.
 B. Wood Joists — Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped. Additional framing members installed to form a square enclosure around the perimeter of the opening in the floor and ceiling.
 C. Furring Channels — (Where Required - Not Shown) — Resilient galv steel furring installed perpendicular to wood joists between opening board and wood joists as specified in the individual Floor-Ceiling Design. Furring channels spaced max 24 in. (610 mm) OC. If furring channels are used within the assembly, additional furring channels to be installed along the periphery of the opening.
 D. Gypsum Board* — Nom 4 ft (1.2 m) wide by 5/8 in. (16 mm) thick as specified in the individual Floor-Ceiling Design. Gypsum board secured to wood joists or furring channels as specified in the individual Floor-Ceiling Design. Max area of ceiling opening is 150 in 2 (0.098 m²) with a max 1.5 in. (38 mm) annular space between duct and framing members.
 2. Steel Air Duct — Max 7 in. (178 mm) diam by min 0.0157 in. (No. 30 gauge or 0.40 mm) thick galv steel air duct to be centered within the opening. Max one steel air duct to be installed within opening. Steel duct to be rigidly supported on top side of floor-ceiling assembly.
 2A. Steel Air Duct — Max 10 by 4 in. (254 by 102 mm) rectangular by min 0.022 in. (No. 26 gauge or 0.56 mm) thick galv steel air duct to be centered within the firestop system. Max one steel air duct to be installed within opening. Steel duct to be rigidly supported on top side of floor-ceiling assembly.
 3. Firestop System — The firestop system shall consist of the following:
 A. Packing Material — Min 9-7/8 in. (251 mm) thickness of unfaced duct wrap material compressed min 25 percent into opening as a permanent form between the insulated steel duct and the periphery of the opening. Packing material to be installed flush with bottom surface of ceiling and recessed from top surface of floor to accommodate the required thickness of fill material.
 B. Fill, Void or Cavity Material* — Sealant — Min 3/4 in. (19 mm) thickness of fill material applied within annulus on top surface of floor. SPECIFIED TECHNOLOGIES INC. — SpecSeal Series SSS Sealant or SpecSeal LCI Sealant. EGS NELSON FIRESTOP — ES1399 Sealant. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC. — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant. TREMCO INC. — Fyre-Sil Sealant. DAP PRODUCTS INC. — DAP Fire Stop Fire-Rated Silicone Sealant. 3M COMPANY 3M FIRE PROTECTION PRODUCTS — FB-1000 NS Sealant. NUCO INC. — Self Seal GG-200.
 C. Duct Wrap Material* — Nom 1/2 in. (13 mm) thick, 8 pcf (128 kg/m³) or nom 1-1/2 in. (38 mm) thick, 6 pcf (96 kg/m³) with foil-scrim facers. The steel duct shall be wrapped with one layer of duct wrap installed in accordance with Ventilation Assembly No. V-32. The duct wrap is secured with min No. 18 Gauge (0.040 in. or 1 mm) galvanized steel wire formed into a loop on one end, with the other end passed through the loop, pulled hand tight and bent over. The wires spaced a max 12 in. (305 mm) OC. See Ventilation Duct Assemblies in Vol. 2 of the Fire Resistance Directory. The annular space between the insulated steel duct and the periphery of the opening shall be a nom 1-1/2 in. (38 mm). A min 1/2 in. high collar consisting of an additional layer of 1/2 in. (13 mm) thick, 6 pcf (128 kg/m³) or nom 1-1/2 in. (38 mm) thick, 6 pcf (96 kg/m³) duct wrap, installed over the duct wrap flush with the top surface of the floor and extending upward. All seams and edges shall be sealed with min 3 in. (76 mm) wide pressure sensitive aluminum foil tape.
 UNFRAX L L C — FyreWrap® DPS or FyreWrap® Elite 1.5

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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Hilti Firestop Systems

Page: 1 of 2

System No. F-C-7057

1. Floor-Ceiling Assembly — The 1 hr fire-rated solid or trussed lumber joist floor-ceiling assembly shall be constructed of the materials and in the manner specified in the individual L500 Series Floor-Ceiling Designs in the UL Fire Resistance Directory. The general construction details of the floor-ceiling assembly are summarized below:
 A. Flooring System — Lumber or plywood subfloor with finish floor of lumber, plywood or Floor Topping Mixture* as specified in the individual Floor-Ceiling Design. Max area of floor opening is 150 in 2 (0.098 m²) with a max 1.5 in. (38 mm) annular space between duct and framing members.
 B. Wood Joists — Nom 10 in. (254 mm) deep (or deeper) lumber, steel or combination lumber and steel joists, trusses or Structural Wood Members* with bridging as required and with ends firestopped. Additional framing members installed to form a square enclosure around the perimeter of the opening in the floor and ceiling.
 C. Furring Channels — (Where Required - Not Shown) — Resilient galv steel furring installed perpendicular to wood joists between opening board and wood joists as specified in the individual Floor-Ceiling Design. Furring channels spaced max 24 in. (610 mm) OC. If furring channels are used within the assembly, additional furring channels to be installed along the periphery of the opening.
 D. Gypsum Board* — Nom 4 ft (1.2 m) wide by 5/8 in. (16 mm) thick as specified in the individual Floor-Ceiling Design. Gypsum board secured to wood joists or furring channels as specified in the individual Floor-Ceiling Design. Max area of ceiling opening is 150 in 2 (0.098 m²) with a max 1.5 in. (38 mm) annular space between duct and framing members.
 2. Steel Air Duct — Max 7 in. (178 mm) diam by min 0.0157 in. (No. 30 gauge or 0.40 mm) thick galv steel air duct to be centered within the opening. Max one steel air duct to be installed within opening. Steel duct to be rigidly supported on top side of floor-ceiling assembly.
 2A. Steel Air Duct — Max 10 by 4 in. (254 by 102 mm) rectangular by min 0.022 in. (No. 26 gauge or 0.56 mm) thick galv steel air duct to be centered within the firestop system. Max one steel air duct to be installed within opening. Steel duct to be rigidly supported on top side of floor-ceiling assembly.
 3. Firestop System — The firestop system shall consist of the following:
 A. Packing Material — Min 9-7/8 in. (251 mm) thickness of unfaced duct wrap material compressed min 25 percent into opening as a permanent form between the insulated steel duct and the periphery of the opening. Packing material to be installed flush with bottom surface of ceiling and recessed from top surface of floor to accommodate the required thickness of fill material.
 B. Fill, Void or Cavity Material* — Sealant — Min 3/4 in. (19 mm) thickness of fill material applied within annulus on top surface of floor. SPECIFIED TECHNOLOGIES INC. — SpecSeal Series SSS Sealant or SpecSeal LCI Sealant. EGS NELSON FIRESTOP — ES1399 Sealant. HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC. — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant. TREMCO INC. — Fyre-Sil Sealant. DAP PRODUCTS INC. — DAP Fire Stop Fire-Rated Silicone Sealant. 3M COMPANY 3M FIRE PROTECTION PRODUCTS — FB-1000 NS Sealant. NUCO INC. — Self Seal GG-200.
 C. Duct Wrap Material* — Nom 1/2 in. (13 mm) thick, 8 pcf (128 kg/m³) or nom 1-1/2 in. (38 mm) thick, 6 pcf (96 kg/m³) with foil-scrim facers. The steel duct shall be wrapped with one layer of duct wrap installed in accordance with Ventilation Assembly No. V-32. The duct wrap is secured with min No. 18 Gauge (0.040 in. or 1 mm) galvanized steel wire formed into a loop on one end, with the other end passed through the loop, pulled hand tight and bent over. The wires spaced a max 12 in. (305 mm) OC. See Ventilation Duct Assemblies in Vol. 2 of the Fire Resistance Directory. The annular space between the insulated steel duct and the periphery of the opening shall be a nom 1-1/2 in. (38 mm). A min 1/2 in. high collar consisting of an additional layer of 1/2 in. (13 mm) thick, 6 pcf (128 kg/m³) or nom 1-1/2 in. (38 mm) thick, 6 pcf (96 kg/m³) duct wrap, installed over the duct wrap flush with the top surface of the floor and extending upward. All seams and edges shall be sealed with min 3 in. (76 mm) wide pressure sensitive aluminum foil tape.
 UNFRAX L L C — FyreWrap® DPS or FyreWrap® Elite 1.5

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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Hilti Firestop Systems

Page: 2 of 2

1 FIRE PENETRATION DETAIL — 5" or 6" DUCTS
M6.04 DETAIL

2 FLOOR CEILING PENETRATION
M6.04 DETAIL

System No. W-L-8110

ANSI/UL1479 (ASTM E814)	CANULC S115
F Ratings — 1 and 2 Hr (See Item 1)	F Ratings — 1 and 2 Hr (See Item 1)
T Rating — 0 Hr	FT Rating — 0 Hr
	FH Ratings — 1 and 2 Hr (See Item 1)
	FTH Rating — 0 Hr

SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner described within the individual U300, U400, V400 or W400 Series Wall or Partition Designs in the UL Fire Resistance Directory and shall incorporate the following construction features:
 A. Studs — Wall framing shall consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced max 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
 B. Gypsum Board* — Nom 5/8 in. (16 mm) thick gypsum board as specified in the individual Wall and Partition Design. Max diam of opening is 5 in. (127 mm).
 The hourly F, FH Rating of the firestop system is dependent upon the hourly rating of the wall in which it is installed.
 2. Air Conditioning (AC) Line Sets — AC line set consists of max two pipes or tubes (Item 2A) and a thermostat cable (Item 2C). The AC line sets shall be rigidly supported on both sides of the wall assembly.
 A. Metallic Penetrants — A max of two pipes or tubes to be installed in each AC line set. The following types and sizes of through penetrants may be used:
 1. Steel Pipe — Nom 3/4 in. (19 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
 2. Iron Pipe — Nom 3/4 in. (19 mm) diam (or smaller) cast or ductile iron pipe.
 3. Copper Pipe — Nom 3/4 in. (19 mm) diam (or smaller) Regular (or heavier) copper pipe.
 4. Copper Tube — Nom 3/4 in. (19 mm) diam (or smaller) Type L (or heavier) copper tube.
 B. Tube Insulation — Plastic* — Nom 1 in. (25 mm) thick acrylonitrile butadiene/styrene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing. The tube insulation may be installed on one max 3/4 in. (19 mm) diam pipe or tube in each AC line set. The space between the insulated and uninsulated pipes or tubes within each AC line set shall be 0 in. (point contact).
 See Plastic (QM22) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 94V-0 may be used.
 C. Cable — One 4 pair No. 18 AWG (or smaller) thermostat cable with polyvinyl chloride (PVC) insulation and jacket materials may be installed with each AC line set.

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System No. W-L-8110

3. Firestop Device* — Firestop device consists of a corrugated steel tube with flanges and gasketing material. Device slid into wall such that ends project an equal distance from the approximate centerline of the wall assembly. Device flanges are spun clockwise onto device threads, over gasketing material butting tightly to both sides of wall. The annular space between the device and the periphery of the opening shall be min 0 in. (point contact) to max 1 in. (25 mm).
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC. — CFS-SL SK 4* Firestop Sleeve
 4. Fill, Void or Cavity Material* — Plug — Nom 4 in. (102 mm) plug sized for the firestop device (Item 3) friction fit within the sleeve flush with the end of the sleeve on both sides of the wall assembly. Plug cut to fit around the line set and installed tightly within the sleeve.
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC. — CFS-PL Firestop Plug

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

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System No. W-L-8081

ANSI/UL1479 (ASTM E814)	CANULC S115
F Rating — 1 and 2 Hr (See Item 1)	F Rating — 1 and 2 Hr (See Item 1)
T Rating — 0 and 1 Hr (See Item 1)	FT Rating — 0 and 1 Hr (See Item 1)
	FH Rating — 1 and 2 Hr (See Item 1)
	FTH Rating — 0 and 1 Hr (See Item 1)

SECTION A-A

1. Wall Assembly — The 1 or 2 hr fire-rated gypsum board/stud wall assembly shall be constructed of the materials and in the manner specified in the individual U300 or U400 Series Wall or Partition Design in the UL Fire Resistance Directory and shall include the following construction features:
 A. Studs — Wall framing may consist of either wood studs or steel channel studs. Wood studs to consist of nom 2 by 4 in. (51 by 102 mm) lumber spaced 16 in. (406 mm) OC. Steel studs to be min 3-1/2 in. (89 mm) wide and spaced max 24 in. (610 mm) OC.
 B. Gypsum Board* — Thickness, type, number of layers and fasteners as specified in the individual Wall and Partition Design. Max diam of opening is 8 in. (152 mm).
 The hourly F, FH Ratings of the firestop system are equal to the hourly rating of the wall assembly in which it is installed. The hourly T, FT, FTH Ratings of the firestop system are 0 for 1 hr fire rated wall assemblies and 1 for 2 hr fire rated wall assemblies.
 2. Air Conditioning (AC) Line Set — Max of three AC line sets bundled within the opening. Each line set consists of one metallic pipe, one insulated metallic pipe and one electrical cable. The aggregate cross-sectional area of the penetrants does not exceed 84 percent of the cross-sectional area of the wall opening. The annular space between the penetrants and the periphery of opening shall be min 0 in. (point contact) to max 1-1/2 in. (38 mm). Penetrants to be rigidly supported on both sides of wall assembly.
 2A. Metallic Pipes — The following types and sizes of metallic pipes, conduits or tubing may be used:
 A. Steel Pipe — Nom 1 in. (25 mm) diam (or smaller) Schedule 5 (or heavier) steel pipe.
 B. Iron Pipe — Nom 1 in. (25 mm) diam (or smaller) cast or ductile iron pipe.
 C. Conduit — Nom 1/2 in. (13 mm) diam (or smaller) steel conduit or EMT.
 D. Copper Pipe or Tube — Nom 1 in. (25 mm) diam (or smaller) Type L (or heavier) copper tube or Regular (or heavier) copper pipe.

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2B. Cables — Max 4 pair No. 18 AWG (or smaller) thermostat cable with PVC insulation and jacket.
 2C. Pipe Covering* — The following pipe covering shall be used with the metallic pipes (Types 2A, 2B and 2D only) having a nom diam greater than 1/2 in. (13 mm).
 A. Tube Insulation — Plastic* — Nom 1 in. (25 mm) thick acrylonitrile butadiene/polyvinyl chloride (AB/PVC) flexible foam furnished in the form of tubing.
 See Plastic (QM22) category in the Plastics Recognized Component Directory for names of manufacturers. Any Recognized Component tube insulation meeting the above specifications and having a UL 94 Flammability Classification of 94V-0 may be used.
 3. Firestop System — The details of the firestop system shall be as follows:
 A. Fill, Void or Cavity Material* — Sealant — Min 5/8 in. (16 mm) thickness of fill material applied within annulus, flush with both surfaces of wall assembly. Fill material used into grooved penetrant interfaces to max extent possible within opening.
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC. — FS-ONE Sealant or FS-ONE MAX Intumescent Sealant
 B. Fill, Void or Cavity Material* — Wrap Strip — Nom 3/16 in. (5 mm) thick by 1-3/4 in. (44 mm) wide intumescent wrap strip. Wrap strip is continuously wrapped around the outer circumference of bundled penetrants two times with ends butted and held in place with tape. Wrap strip installed flush with both surfaces of wall assembly.
 HILTI CONSTRUCTION CHEMICALS, DIV OF HILTI INC. — CP948-E-W251-3/4" Wrap Strip
 C. Steel Collar — Steel collar fabricated from coils of product min 0.016 in. (0.41 mm) thick (No. 28 gauge) galv steel available from fill material manufacturer. Collar shall be min 1-3/4 in. (44 mm) deep with 1 in. (25 mm) wide by 2 in. (51 mm) long anchor tabs on 1-3/4 in. (44 mm) centers for securement to both surfaces of wall. In addition, collars contain preformed retainer tabs 1/2 in. (13 mm) wide by 3/16 in. (5 mm) long, located opposite the anchor tabs. Collar shall be tightly wrapped over the wrap strip, overlapping min 1 in. (25 mm) at seam and compressed with a min 12 in. (305 mm) wide by 0.028 in. (0.71 mm) thick stainless steel band at collar mid-height. Every other anchor tab of collar secured to surface of wall with min 1-1/2 in. (38 mm) long drywall or laminate screws with min 3/4 in. (19 mm) steel washers.

* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.

Bearing the UL Recognized Component Marking

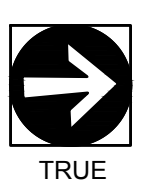
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3 SINGLE HVAC LINESET PENETRATION
M6.04 SCALE: DETAIL

4 MULTIPLE HVAC LINESET PENETRATION
M6.04 SCALE: DETAIL



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COLUMBIA ALLED SERVICES
WISDOM. SOLUTIONS. MATTER.

MFA Consulting Engineers
2007 S.E. Ash St.
Portland, OR 97214
PHN: (503) 234-0548
FAX: (503) 234-0677
WWW.MFA-ENG.COM
CONTACT: Mark Denyer

MERIDIAN GARDENS
11250 SE DIVISION STREET
PORTLAND, OREGON 97266
CENTRAL CITY CONCERN

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